

**Motivation Factors of the State-owned Enterprise Personnel
in China: A Case Study Based on a SME**

Huang Jun

Thesis submitted as partial requirement for the conferral of the degree of

Doctor of Management

Supervisor:

Prof. Alexandra Fernandes, Assistant Professor, ISCTE University Institute of
Lisbon

Co-supervisor:

Prof. Wang Bingjie, Associate Professor, University of Electronic Science and
Technology of China, School of Management and Economics

September, 2019



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ABSTRACT

Perfecting the motivation mechanism of state-owned enterprises is an important research direction under the present circumstances of major changes in state-owned enterprises. Under the background of the continuous development of the construction industry, this thesis takes CSADI Engineering & Technology Co., Ltd. as an example to study the motivation factors of state-owned enterprise personnel, explore and establish motivation mechanism model for state-owned enterprise personnel. In particular, it provides reference for the establishment of motivation mechanisms for small and medium-sized engineering technology-oriented state-owned enterprise to mobilize the enthusiasm of corporate personnel and help achieve corporate goals.

This thesis, firstly, abstracts the research on motivation factors of domestic and foreign scholars by literature research. Secondly, it finds out the problems existing in the motivation mechanism of CSADI Engineering & Technology Co., Ltd. and the motivation factors preferred by the personnel of CSADI Engineering & Technology Co., Ltd. through motivation survey questionnaires. Based on this, we designed and perfected the questionnaires on motivation factors for the personnel of CSADI Engineering & Technology Co., Ltd.

Using SPSS22.0 statistical analysis software, the reliability and validity of the survey are tested by reliability analysis and validity analysis. Through the factor analysis, the main motivation factors are obtained and classified. Finally, the preferences of the personnel for motivation factors under different background characteristics such as gender, age, education, job title, job type, length of service, salary level, and entry time have been studied through the analysis of variance, providing empirical research basis for the establishment of motivation mechanisms.

Then based on the research results of motivation factors, a motivation model for engineering technology-oriented state-owned enterprises is proposed. Besides, the motivation

survey and employee performance comparison are adopted to test the effectiveness of the model. According to the results of comparative analysis, different types of personnel are separately motivated and the motivation model for engineering technology-oriented state-owned enterprises is modified.

Finally, the main contents of the motivation model for engineering technology-oriented state-owned enterprises and the performance evaluation for implementing the motivation mechanism are summarized. Through the research on the motivation factors of CSADI Engineering & Technology Co., Ltd., it has certain reference significance for the establishment of the motivation mechanism for engineering technology-oriented state-owned enterprises.

Key words: State-owned enterprise, motivation factors, motivation model, statistical analysis

JEL: M12, M54

RESUMO

O principal objetivo desta tese é tentar identificar os factores de motivação mais adequados para se gerir empresas público-privadas, dado que estas empresas proliferam na China e são confrontadas com grandes desafios. Esta dissertação irá estudar a empresa CSADI Engineering & Technology Co., Ltd., que é uma empresa público-privada. Pretende-se compreender, explorar e estabelecer um modelo que entenda a motivação dos seus colaboradores. Especificamente, este estudo pretende servir de referência para a compreensão da motivação em pequenas e médias empresas do setor tecnológico que sejam público-privadas, de modo perceber-se a motivação dos seus colaboradores e, em simultâneo, o modo como as empresas atingem os objetivos organizacionais que se propõem atingir.

Esta tese apresenta uma revisão da literatura sobre os fatores motivadores preocupando-se em apresentar uma visão global neste domínio. De seguida, estuda-se o caso da empresa CSADI Engineering & Technology Co., Ltd., onde foi aplicado um questionário aos seus trabalhadores procurando compreender quais são os fatores que estes consideram ser mais importantes em termos motivacionais.

A partir de uma análise estatística realizada com o SPSS22.0 fez-se um estudo da fiabilidade e validade do questionário. Em seguida foram analisados os principais fatores motivacionais obtidos a partir dos resultados e tendo por base o género, a idade, a educação, a função, o tempo de serviço e o nível salarial. Este estudo foi realizado baseando-se na análise da variância.

Através desta análise foi então criado um modelo dos fatores motivacionais para empresas no domínio da engenharia tecnológica que sejam público-privadas. Posteriormente, fez-se uma comparação entre o questionário de motivação e o desempenho do trabalhador de forma a perceber-se a eficiência do modelo proposto.

Por último, efetuou-se um resumo dos principais fatores motivacionais para empresas do domínio da engenharia tecnológica público-privadas e também se encontraram fatores de medidas relativas à avaliação de desempenho.

Key words: Empresas publico privadas, fatores de motivação, modelo de motivação, análise estatística

JEL: M12, M54

摘 要

完善国企激励机制是当今国企大变革背景下的重要研究方向。在建筑业持续发展的行业背景下，本文以工程技术型国企—科思达工程技术有限公司为例，对国企人员激励因素进行研究，探索建立适合国企人员的激励机制模型，尤其是为中小型工程技术型国企的激励机制建立提供参考，以调动企业员工积极性，帮助实现企业目标。

本文首先通过文献研究对国内外学者的激励因素研究进行提炼，再通过满意度问卷调查和人员访谈，找出科思达公司现有激励机制存在问题，寻找科思达公司人员自身偏好的激励因素，在此基础上设计完善科思达公司人员激励因素问卷调查。

再运用 SPSS22.0 统计分析软件，采用信度分析、效度分析来检验问卷调查的信度和效度，再通过因子分析，得出主要激励因素，并对其进行归类，最后通过方差分析研究性别、年龄、学历、职称、岗位类型、工龄、薪酬水平、入职时间等不同背景特征下企业人员对激励因素的偏好程度，为激励机制的建立提供实证研究依据。

然后根据激励因素的研究成果，提出工程技术型国企的激励模型。并运用满意度调查、人员绩效对比检验激励模型的有效性。根据对比分析结果，对不同类型人员分别进行激励，修正工程技术型国企激励模型。

最后总结工程技术型国企激励模型的主要内容以及激励机制实施的保障措施。通过对科思达工程技术型有限公司激励因素研究，对工程技术型国企激励机制的建立有一定参考意义。

关键词：国企 激励因素 激励模型 统计分析

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在博士期间的学习和研究过程中，论文的写作得到了两位导师的悉心指导。从论文的选题，到论点的确立、研究方法的选取、章节的布置等每一个写作过程都倾注了两位导师的大量心血，让我深受启发。同时两位导师无私的教诲、严谨的态度、睿智的思维及渊博的学识也深深感染了我，让我受益终身。

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Chapter 1: Introduction

1.1 Research background

As an important economic lifeline for China's development, state-owned enterprises have been shouldering the important responsibility of prospering the economy and making significant contributions to China's economic development. In the past 70 years since the founding of the People's Republic of China, state-owned enterprises have undergone major reforms in corporate management, staffing, and other aspects. In terms of the staff management and allocation, they have adopted such measures as decentralization of power, paying taxes instead of submitting their profits to the administration, contracting, transformation of systems and mechanisms, transfer of profits and loosening(Sun, 2014). On November 12, 2013, the Third Plenary Session of the 18th CPC Central Committee adopted the "Decision of the Central Committee of the Communist Party of China on Several Major Issues Concerning Comprehensively Deepening Reforms," which has proposed to promote the improvement of the modern corporate system established by state-owned enterprises. On August 24, 2015, the "Guiding Opinions on Deepening the Reform of State-owned Enterprises" promulgated by the Central Committee of the Communist Party of China and the State Council, which have proposed that state-owned enterprises must put into implementation the compensation distribution system that suits the need of the socialist market economy. Under the background of comprehensive reforms, the reform of state-owned enterprises has become the key to the success or failure of today's economic restructuring and industrial restructuring. The development of state-owned enterprises has become a powerful guarantee for the steady growth of the national economy and the continued enhancement of economic vitality. Perfecting the motivation mechanism of state-owned enterprises means to carry out the reform of the state-owned enterprises and put into implementation the modern corporate system, so it is of

great practical significance. A good motivation mechanism has a direct impact on the success of human resources management in state-owned enterprises, and directly affects the creation of corporate economic values and culture system.

In 2016, the Ministry of Housing and Urban-Rural Development issued the Outline of the 13th Five-Year Plan for the Construction of Urban and Rural Housing, which has proposed that the value added of the construction industry will increase by 5.5% annually during the 13th Five-Year Plan period, and be lowered from 9.0% during the 12th Five-Year Plan period to 5.5%, which is also lower than the plan for annual GDP growth of 6.5% or more mentioned in the Outline of China's 13th Five-Year Plan. Besides, the growth of China's construction industry will slow down. Although China has completed the urban development and construction on a large scale, and the situation the construction industry is facing in the development process is tighter, China's urbanization has a long way to go. Urbanization is the biggest opportunity faced by China's construction industry. In the process of urbanization, a large number of shantytowns and residential houses need to be renovated and constructed. The government will also build a large number of public facilities such as schools and hospitals as well as infrastructures such as transportation, electricity, and water to meet the public demands. Urbanization will bring huge space for development to various types of construction companies, and the construction industry is promising.

However, the engineering technology-oriented state-owned enterprises in China have long been exposed to the situation such as shortage of technicians, lack of practical experience and insufficient inter-disciplinary talents and personnel with official qualifications. This is especially true for most engineering technology-oriented companies during the start-up period. As the manager of an engineering technology-oriented state-owned enterprise, I have often urged myself to think about how to be adapted to the background of the reform of state-owned enterprises, to develop and expand the enterprise amid the fierce market competition, and to earn a place. To keep ahead of this change, organizations and managers should become change leaders (Drucker, 2006). In light of this, based on the emerging state-owned small and

medium-sized engineering technology-oriented enterprises, the author explores the effects of motivation factors on the personnel of engineering technology-oriented state-owned enterprises in various aspects in order to establish a motivation mechanism consistent with the background of the reform of state-owned enterprises, thus stimulating the enthusiasm and creativity of all the personnel and helping the company to be in an invincible position in the market competition.

1.2 Research purpose and significance

1.2.1 Research purpose

Taking CSADI Engineering & Technology Co., Ltd. as a research case, this thesis explores the establishment of a motivation mechanism model for engineering technology-oriented state-owned enterprises by studying the motivation factors of CSADI personnel. The research purposes include:

1. Through sorting out of related research results and motivation surveys, the motivation factors that exercise a significant influence on the personnel of engineering technology-oriented state-owned enterprises are extracted. On this basis, questionnaires are designed to investigate and acquire sample characteristics and data required for research.

2. The main motivation factors of CSADI personnel are obtained through factor analysis. Through analysis of variance, the influence of differences in gender, age, job title, job type and salary level, etc. on the main motivation factors is explored.

3. According to the results of empirical research, the motivation mechanism model for the engineering technology-oriented state-owned enterprises is built. Before and after the establishment of the comparison model, the degree of motivation of the personnel with the motivation factors and their performance evaluation are tested to verify the effectiveness of the motivation mechanism model, so as to update the motivation model, with the expectation of providing the engineering technology-oriented state-owned enterprises in the early stages of

development with a reference to build a motivation mechanism model, and to enrich the motivation mechanism theory.

1.2.2 Research significance

(1) Theoretical significance

As a hot topic of current research, the study of corporate motivation integrates such disciplines as management, human resources, psychology, and economics. At present, there are many studies on the motivation factors in the corporate organization across the academic community. However, there are few studies on the motivation factors under the background of engineering technology-oriented state-owned enterprises. At the same time, among existing studies on the motivation factors, few of them are combined with the current status of China's state-owned enterprises, quantitative and targeted at personnel at all levels of the company but more copy the foreign theories, qualitative and focus on special groups (such as corporate executives, college teachers, and civil servants). Besides, there exist such problems as lack of depth and system, lagging behind reality in the research, which result in their poor guiding significance for reality.

In consideration of this theoretical research status, the author selects this research topic. Based on the background of the reform of state-owned enterprises in China, by reference to domestic and foreign theoretical research on motivation factors and taking CSADI Engineering & Technology Co., Ltd. as an example, the author, through questionnaires, explores the problems existing in the company's current motivation, and establishes a motivation mechanism model for the personnel of engineering technology-oriented state-owned enterprises by studying the motivation factors. On the one hand, the author hopes to have theoretical guidance significance for the updating and improvement of the motivation mechanism for the personnel. On the other hand, the author hopes to provide a theoretical basis for the governance and development of modern enterprises, provide a reference for deepening the reform of state-owned enterprises and improving the modern enterprise system, and provide

a theoretical reference for the research into motivation factors of engineering technology-oriented state-owned enterprises.

(2) Practical significance

For enterprises, the key factor is still people. How to maximize the enthusiasm and creativity of each and every person in the company is the top priority of the company's development. In the increasingly fierce market competition, the enterprise leader must adopt a management mode conforming to the specific characteristics of the company's personnel and work out targeted motivation measures in order to improve the company's human resources to the maximum and create more value for the company.

By reference to the previous research results, this thesis, through the research on the motivation factors of the personnel of CSADI Engineering & Technology Co., Ltd., provides a series of strategies and suggestions as to the motivation mechanism for the personnel of engineering technology-oriented state-owned enterprises, hoping to provide small and medium-sized engineering technology-oriented enterprises at the start-up period with practical reference to establish the motivation mechanism.

1.3 Research ideas and research methods

1.3.1 Research ideas

Firstly, this thesis systematically reviews, studies and summarizes the research on motivation theory and motivation factors, and defines the engineering technology-oriented enterprises and state-owned enterprises. Secondly, it conducts empirical research using CSADI Engineering Co., Ltd. for case study. Literature reviews, personnel interviews and questionnaire surveys are used to collect data. With the help of SPSS 22.0 analysis software, reliability analysis, validity analysis, factor analysis and variance analysis, etc. are adopted to conduct motivation factor research. Finally, based on empirical research results, this thesis proposes the motivation mechanism model for CSADI personnel, tests the applicability of this

model by comparing the degree of motivation and performance. Then the motivation mechanism model is updated according to the test results.

In terms of the research structure, this thesis includes the following eight chapters:

Starting from the background of the current state-owned enterprise reform and the prospects of the construction industry at the current stage, the first chapter (Introduction) clarifies the research background under which the motivation factors of the personnel of engineering technology-oriented state-owned enterprises are studied, puts forward the targeted research questions, and summarizes the research purpose, significance, ideas, methods, technical route and innovation of this thesis.

The second chapter (Literature review) systematically sorts out the relevant classical motivation theories, especially content-based motivation theories, and meanwhile concludes and summarizes the domestic and foreign research results on motivation factors, laying the foundation for the research work of this thesis, points out the research direction, and defines the concepts of engineering technology-oriented enterprises and state-owned enterprises involved in this thesis.

The third chapter introduces the basic situation of CSADI Engineering & Technology Co., Ltd. from three aspects: the company's profile, the company's business sector and the company's personnel structure.

Taking CSADI Engineering & Technology Co., Ltd., an engineering technology-oriented state-owned enterprise as an example, based on the current research results on motivation factors, the fourth chapter (Research design), through motivation questionnaire surveys and personnel interviews, acquires the data about the degree of their motivation with the company's motivation and points out the existing problems. On this basis, the questionnaires are designed, distributed and collected to obtain the data about the motivation factors.

The fifth chapter (Data analysis of questionnaire on motivation factors) analyzes the questionnaires of motivation factors, uses SPSS22.0 statistical software for reliability analysis and validity analysis to test the reliability and validity of the survey, and then obtains the main

motivation factors through factor analysis and classifies them. Finally, the variance analysis is performed to study the corporate personnel's preference for motivation factors under different background characteristics.

According to the study of motivation factors, the sixth chapter (Design and test of the motivation model) proposes a motivation mechanism model for the personnel of engineering technology-oriented state-owned enterprises, tests the effectiveness of the model through motivation survey and personnel performance comparison, and on this basis, updates this model.

The seventh chapter outlines the details of the motivation model and the safeguard measures for its implementation.

The eighth chapter summarizes the main research conclusion of this thesis,

The ninth points out the limitations of this thesis and the prospects for future research.

1.3.2 Research methods

In this thesis, a variety of research methods are adopted, including literature theory research, in-depth questionnaires, statistical analysis and comparative analysis, etc. Besides, this thesis combines qualitative research with quantitative research to study the motivation factors of the personnel of engineering technology-oriented state-owned enterprises. To be specific,

(1) Literature theory research method. Through the investigation of the literature, the motivation theory and motivation factors involved in this study are analyzed, summarized, and sorted out to lay the theoretical foundation for the development of this thesis, and serve as the theoretical basis for the questionnaire design in the study.

(2) Questionnaire survey. On the basis of relevant literature research, a questionnaire survey is designed to study the preference of the personnel of engineering technology-oriented state-owned enterprises for motivation factors. The first-hand raw data is obtained to provided data support for the subsequent research.

(3) Statistical analysis. The original data obtained from the questionnaire survey is analyzed using SPSS22.0 analysis software, such as reliability analysis, validity analysis, factor analysis and variance analysis. The data can intuitively reflect the problems to provide specific basis for the study of this thesis.

(4) Comparative analysis. When using SPSS22.0 statistical analysis software for data analysis, the preference of the personnel for main motivation factors under different background characteristics, such as gender, age, job title, job type, length of service, etc. is compared to provide a basis for the establishment of motivation mechanism model. At the same time, the degree of motivation and performance of the enterprise staff before and after the establishment of the motivation mechanism model are compared.

1.4 Technical route and innovation

1.4.1 Technical route

The technical route of this thesis is shown in Figure 1-1:

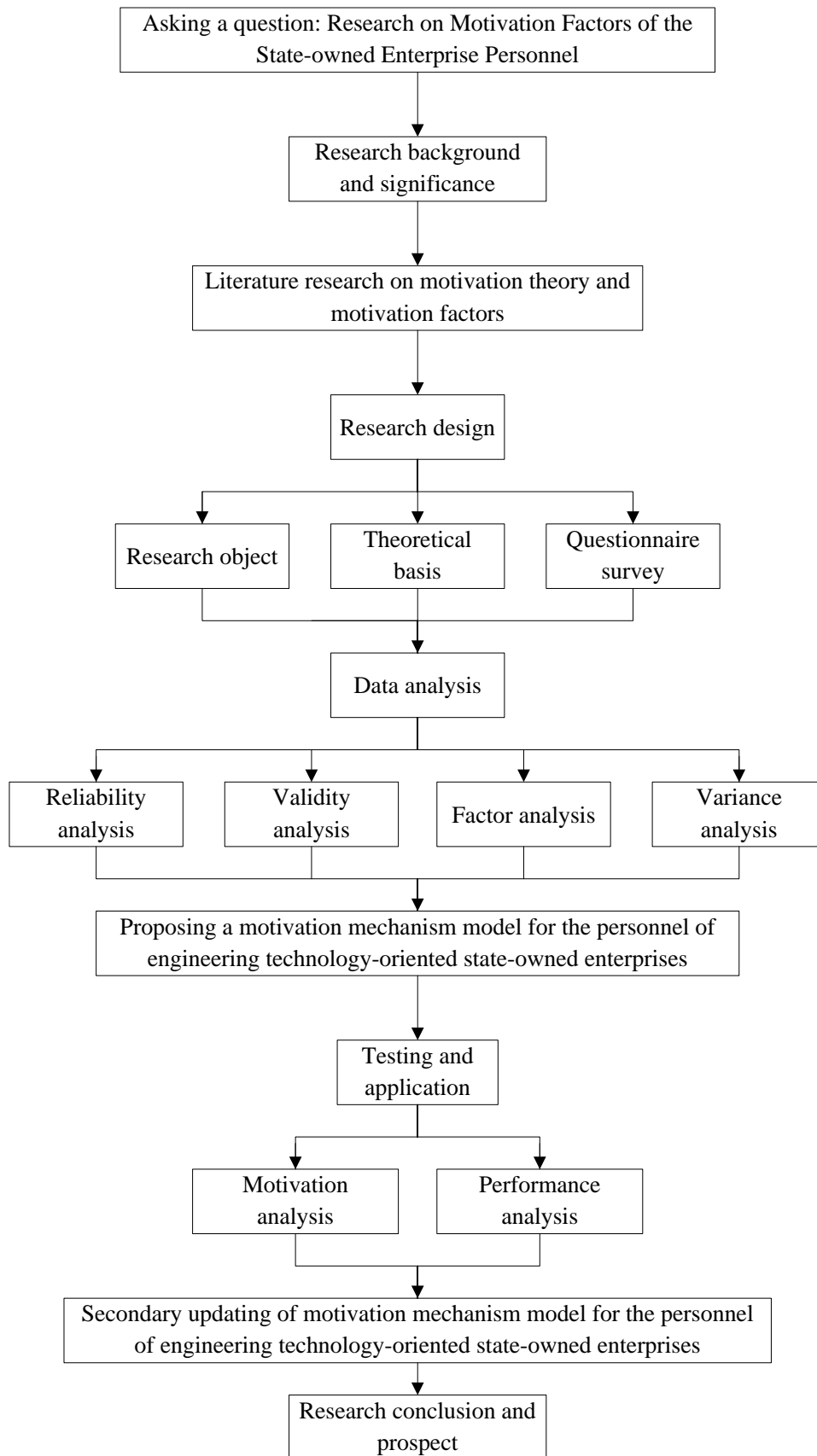


Figure 1-1 Technical route

1.4.2 Innovation

The innovation of this thesis is embodied in the following aspects:

(1) Taking the specific engineering technology-oriented state-owned enterprise, i.e. CSADI Engineering & Technology Co., Ltd. as an example, this thesis studies the motivation factors of corporate personnel to provide operational guidance on improving the motivation mechanism of the company.

(2) From the perspective of the research scope, most researches on the motivation factors are conducted among specific groups such as executives, professional managers, knowledge-based employees, teachers, civil servants, and new-generation employees. In comparison, this thesis, based on all the staff of engineering technology-oriented state-owned enterprises, divides them into marketing personnel, technical personnel, and management personnel, and studies the motivation factors of the company-wide personnel, so it has guiding significance for the entire corporate motivation.

(3) In the past, there were few researches on motivation factors of engineering technology-oriented state-owned enterprises. By studying the motivation factors for the personnel of engineering technology-oriented state-owned enterprises, this thesis provides the engineering technology-oriented state-owned enterprises, especially those at the start-up period with a reference to establish a motivation mechanism, and further enriches the research on motivation theory.

Chapter 2: Literature Review

Motivation means to guide people in a targeted way in the process of personnel management, so as to mobilize the enthusiasm, initiative and creativity of the managed personnel to the fullest, and ensure the achievement of the established goals. By continuously driving the motivation and inner impetus of the personnel, the motivation always keep people in a passionate state and guide them to take actions towards the desired goals.

The famous American scholar Robbins(2006) thought that motivation is the process of achieving organizational goals by stimulating employees' high-level efforts after some of their needs were met. Motivation included three key factors: effort, organizational goals and needs. Of them, efforts were strength indicators, including the quality of efforts. Organizational goals were the direction of effort, and needs were internal driving forces. Motivation would reinforce the behavioral motivations and the needs.

Yu (2014) cited the engine, motivation-induced behavior and behavior-oriented goals as required, to express the psychological process that motivates people's motivation. Human behavior was motivated by a specific goal and governed by motivation, while human motivation was triggered by some kind of need. This theoretical process explained well the whole process of the motivation mechanism.

Zhang (2016) proposed that motivation referred to the systematic activities with the purpose of stimulating, guiding, maintaining and regulating the behavior of individual members, and thus effectively achieving the goals of organizations and individuals by adopting certain criteria and rewards and penalties, designing the appropriate forms of external rewards and working environment and relying on information communication. In modern corporate management, the motivation is to mobilize the enthusiasm and creativity of employees, so that employees can work hard to accomplish the goals of the organization. Ultimately, while

achieving the organizational goals, they can also realize their own needs and effectuate the unity of the organizational and personal goals.

By synthesizing various theories and research results, this thesis summarizes the motivation as that the organizer of a specific system understands the needs of their members, takes effective actions, and implements positive or negative reinforcement motivation for their members, thereby stimulating their internal and behavioral changes, enabling members of the organization to move towards the desired goals of the organizer and achieving the goals of the organization.

2.1 Related motivation theory

Motivation theory is to study how to attract and retain talents, and enhance the enthusiasm of personnel from the perspective of human resources. In management science, scholars have been actively studying how to meet people's demands, and putting forward many motivation theories in combination with psychology and sociology. Since the 20th century, people have carried out a lot of research and analysis on motivation, and their understanding of human nature has been continuously improved. During the transition from economic man to social man, self-actualizing man, and then to cultural man, complex man and harmonious man, the motivation pattern has turned from the single financial incentive into multiple-demand motivation, and the motivation theory has developed from the research on motivational foundations to the motivational process, i.e. from the generalized research to specific process research (Chen, 1996).

Motivation theory understands human nature from different perspectives and can be divided into content-based motivation theory, process-based motivation theory, behavior modification motivation theory and comprehensive motivation theory. The content-based motivation theory revolves around what people are pursuing, including Maslow's hierarchy of needs, ERG theory, two-factor theory and three needs theory. The process-based motivation theory focuses on how people's goals influence people's behavior and ultimately influence

their performance, including expectancy theory, equity theory, attribution theory and goal-setting theory (Wang, Gao, & Nan, 2002). Behavior modification motivation theory fully recognize the key role of the environment in shaping people's behaviors, and believe that human behaviors act on certain environments, while the external environment has a significant impact on human behaviors. The purpose of motivation is to modify and correct the way people behave through external influences. The theory not only pays attention to the stimulation and maintenance of positive behaviors, but also focuses on the transformation and elimination of negative behaviors, including the attribution theory and the reinforcement theory. Comprehensive motivation theory combines content-based motivation theory and process-based motivation theory, including Porter-Lawler model, Dill's comprehensive motivation theory and Robbins theory(Hao & Liu, 2003).

2.1.1 Content-based motivation theory

From the perspective of research content, the content-based motivation theory starts with the specific motivations and incentives which stimulates human behaviors, studies the motivation factors that motivate employees to work hard, and the motivation to meet people's needs. The topic discussed in this thesis is the content-based research.

1. Hierarchy of needs

According to the hierarchy of needs of Maslow (1943), a well-known American psychologist, people's needs are divided into five levels and portrayed in the shape of a pyramid from bottom to top: physiological needs, safety needs, social belonging, esteem and self-actualization. Physiological needs include food, shelter and other physiological needs. Safety needs include physical safety, emotional safety and property security. Social belonging includes interpersonal relationships. Esteem includes self-esteem, autonomy and sense of accomplishment, etc. Self-actualization includes realization of the potential and dream, etc. The first two are the most basic needs of people and can be satisfied through external conditions, so they are low-level needs. The last three are spiritual needs and need to be nurtured in the future,

so they are high-level needs. Only when the low-level needs are met, the level of human needs will increase, and high-level needs will occur. Low-level needs will not disappear as high-level needs are dominant, but continue to exist with the weakened influence.

This theory has a positive impact on designing motivation to meet people's needs. It clarifies the hierarchy and diversity of individual needs, provides a theoretical framework for the study of relevant motivation factors, and enlightens that different motivation should be taken separately over the staff at different stages and with different background characteristics.

2. ERG theory

Alderfer (1969) puts forward the theory of ERG based on Maslow's theory through more practical research. He summed up the needs of people as existence needs, relatedness needs and growth needs. Among them, the existence needs correspond to the physiological needs and safety needs in Maslow's theory, the relatedness needs to the social belonging, and the growth needs correspond to esteem and self-actualization.

A person can have many needs at the same time, and the less a certain need gets, the stronger the need is. The high-level needs are established after the low-level needs are met. If it is difficult to meet the high-level need, the person will settle for the low-level one and this need will become stronger than before.

The ERG theory is of great significance for the motivation in the management practice. When the employees lack sufficient autonomy and more development opportunities in their work due to various reasons, they should be given more motivation in terms of existence and relatedness to enhance their enthusiasm.

3. Two-factor theory

An American psychologist Herzberg (1959) put forward a two-factor theory composed of hygiene factors and motivation factors on the basis of empirical research. Hygiene factors refer to the factors that cause people's dissatisfaction, and motivation factors refer to factors that cause people's satisfaction. Inadequate hygiene motivation will result in dissatisfaction, negative absenteeism, and even strikes and other aggressive behaviors. After the hygiene

factors have been satisfactorily met, no matter how people are motivated, it is difficult to continue to motivate their enthusiasm. Motivation factors can stimulate people's enthusiasm for work, and enhance their enthusiasm and work efficiency. However, even though motivation factors cannot be met, they will not be dissatisfied.

The two-factor theory points out that not all motivation factors can increase employees' enthusiasm, and more efforts should be put in the implementation. In the motivation process, hygiene factors and motivation factors should be used to provide different motivation to employees at different levels and with distinct characteristics.

4. Three needs theory

McClelland and Winter (1969) puts forward the three needs theory based on other research results. Three needs include the need for power, the need for affiliation and the need for achievement. Under the premise that physiological needs are met, everyone has these needs, and different people have different degrees of these three needs. People with strong demand for power desire to influence and control others, and prefer the positions where they can direct others and make them obedient. People with strong demand for affiliation are eager to establish favorable interpersonal relationships, and receive care and attention from outside. People with strong achievement needs are eager to get satisfaction from work and prefer risky and complicated work.

Three needs theory is of great significance in the practice of corporate management, which is embodied in two aspects. On the one hand, with its help, talented people are selected and arranged in suitable positions. On the other hand, an appropriate motivation mechanism is established according to the individual needs of different people and people of different categories are effectively motivated.

2.1.2 Process-based motivation theory

The process-based motivation theory examines the process of forming motivation, selecting the target and taking behaviors by people from the perspective of how employees are

motivated and what approach is taken to complete the target. Process-based motivation theories include equity theory, expectancy theory, attribution theory, reinforcement theory and frustration theory.

1. Adams (1963) proposed the equity theory. It is believed that employees' satisfaction with motivation depends not only on the absolute return of employees but also on the relative returns of employees. Only when the relative return of employees is relatively fair, i.e. each employee's rewards are quite appropriate to his costs, the employees can be motivated. The equity theory consists of three aspects: fair content, fair procedures and fair outcomes, where content fairness is the basis, procedural fairness is the key, and outcome fairness is the target. As long as the motivation mechanism controls the justice of process and procedures, people's sense of fairness will increase significantly. The employees' level of effort depends critically on whether employees are treated impartially. Theoretical and experimental studies have shown that people have a variety of social preferences such as fairness preference, and this preference has a significant impact on social and economic activities. Everyone wants to get his fair share, not just focusing on their own earnings. If employees feel unfair during their work, they will adjust their behaviors and reduce related inputs. Therefore, in the motivation process, both the absolute value and the relative value of the rewards affect the motivation effect, so the sense of fairness will be improved if employees are motivated according to their contributions (inputs).

2. Vroom (1970) puts forward the expectancy theory. The theory points out that employees will be motivated only when the effectiveness of their rewards and the possibility of completing the goal are high on the whole. When the reward effectiveness is high, but the possibility of completing the goal is low, it is difficult to motivate the employees. Managers should set a goal of moderate difficulty to employees. The desired formula is as follows: $F=E*P$, wherein F is the motivation effect, E is the motivation reward and P is the possibility of achieving the goal.

According to the expectancy theory, people's evaluation of rewards and the association between rewards and achievement of work goals determine whether rewards can become effective motivators. Therefore, on the basis that employees believe that they can work hard to

achieve the desired rewards, managers need to find what employees expect to obtain, which will be used to encourage employees to work hard as rewards.

2.1.3 Behavior modification motivation theory

1. The attribution theory proposed by American psychologist Heider (1958) refers to the methods and theories which mainly study the reasons why people take certain behaviors and the consequences of such behaviors, and their relationship. The theory points out that human behavior can ultimately be attributed to a certain cause, and this cause will have a very important impact on people's behaviors and work enthusiasm. Heider divides the causes of all things into two types: internal causes including emotions, attitudes, personality, and abilities, etc. and external causes including external pressures, weather, and situations, etc. Most people are accustomed to attributing to external factors when explaining their own behaviors, while attributing to internal causes when explaining the behaviors of others. The theory also summarizes the two principles of attribution adopted. First, in many different situations, a particular cause always leads to a particular outcome, and the outcome will not occur without such cause. In Heider's opinion, the outcome results from this cause, and it is the principle of covariation. For example, someone complains when they start working, under a low mood, and they always maintain a happy mood when they are not working. Then we think that work is unpleasant for someone, and the key to unhappiness is work rather than other internal causes. Second, the exclusion principle. If only one cause, whether internal or external, can explain something completely, other causes will be excluded. For example, if someone born with a disability cannot take care of himself when he grows up, people will think that such inability is due to his inherent congenital disability, thus excluding other external factors.

2. Skinner (1953) proposed the reinforcement theory, holding that people's action or inaction is determined by the consequences of behavior. People take certain actions in order to achieve a certain purpose. When the consequences of such behavior are beneficial to him, the behavior will be strengthened, once the consequences of such behavior are unfavorable to him, the behavior will be weakened until it disappears. From this point of view, the consequences

of behavior determine the emergence or disappearance of behavior. The theory points out that positive stimulation can promote the repeated emergence of behavior, and reverse stimulation can inhibit the emergence of behavior.

In the reinforcement theory, there are two types of reinforcement according to different attributes and purposes: positive reinforcement and negative reinforcement respectively. Positive reinforcement is to encourage employees to constantly repeat the behaviors that meet the organizational expectations through appropriate rewards. Negative reinforcement is to suppress or eliminate employees' undesired behaviors that disobey the organizational expectations through appropriate punishments. Positive reinforcement motivates employees to work hard and negative reinforcement can eliminate some negative behaviors, but it is far less effective than positive reinforcement in terms of stimulating the employees. Therefore, we are expected to encourage employees to work hard through positive motivations such as praise and rewards, etc., reward the outstanding employees, and set an example among the enterprises.

2.1.4 Comprehensive motivation theory

The comprehensive motivation theory tries to overcome the one-sidedness of various theories and summarizes the various theoretical systems so as to maximize the potential of employees and improve overall performance, represented by Porter-Lawler theory.

Based on a comprehensive consideration of various motivation factors, Porter-Lawler motivation theory integrates the hierarchy of needs, equity theory, reinforcement theory and expectancy theory. Its emphasis is placed on that motivation is a process of combining individual internal conditions, external stimuli, behavioral performance, and behavioral results. The process depends on the degree of effort of the employees, their abilities and awareness of the tasks, and the influence of the external environment. In addition, the motivation process should also take into consideration the communication and supervision constraints (Porter & Lawler, 1968).

The specific contents of the Porter-Lawler Model are that after a person makes certain achievements in his work, the compensations or rewards he will obtain can be generally divided into two categories. One is the extrinsic rewards, including salary, status, promotion and sense of safety, etc. According to Maslow's hierarchy of needs, extrinsic rewards often motivate some lower-level needs. The other is the intrinsic rewards, i.e. the self-reward for his good performance during work, such as feeling contributive to the society, affirmation of self-worth and ability. It motivates some of the higher-level needs and is directly related to the work performance. However, intrinsic rewards and extrinsic rewards cannot directly determine whether an individual is satisfied with the motivations or not, and it must be adjusted through "equity perceptions". If an individual believes that he has been paid the same amount of reward as he expects, he will feel satisfied and be motivated to work harder in the future. If he thinks that the rewards he has obtained are less than the "equitable reward he understands", he will feel unsatisfied or even disappointed, which will affect his future efforts.

The Porter-Lawler theory enlightens us not only to set motivation goals and means to make employees satisfied, but also to form a virtuous circle of motivation, effort, performance, reward, and satisfaction. Its effectiveness depends on the content of rewards, reward and punishment system, organization and labor division, behavioral goal setting, management level, fair evaluation, leadership style, and personal psychological expectations and other comprehensive factors.

The related classical theory has studied the problem of employee motivation from different perspectives and at different levels, and has a programmatic guiding significance in practice. These classical theories, especially the content-based motivation theory provide a theoretical reference to the study of motivation factors in this thesis and are the basis for the study. With the development of the era and the differentiation of industries, the original motivation theory is not suitable for the current development trend of the times. We need to combine the different backgrounds of enterprises and the personnel based on the classical

theory to explore the most suitable motivation and improve the level of corporate human resources management.

2.2 Research review of motivation factors

Motivation factors are a very important part of the research on motivation theory. Motivation factors are employees' demand factors through which we can satisfy employees' personal demands effectively, arouse employees' work enthusiasm, and thus encourage employees to work harder.

The first person to start the research on the motivation factors of employees was Herzberg. As early as 1959, Herzberg analyzed the motivation factors of employees in his classic two-factor theory, and classified these factors into motivation factors and hygiene factors. On this basis, many scholars and consulting organizations at home and abroad have done a lot of qualitative and quantitative research on employee motivation factors, put forward many systems for the dimension division of motivation factors and motivation models, and obtained rich research results. Along with the rise of knowledge management, the research on motivation factors of knowledge-based employees became a hot topic at the end of 1980's. Many scholars and consulting organizations carried out special qualitative and quantitative research on this, among which the American scholar Tampoe's research was the most representative and authoritative, and many subsequent studies were further verified and perfected on his basis. The research on employee motivation factors in China started relatively late, mostly based on reference to the research results of foreign countries. On this basis, a large number of theoretical and empirical studies have been carried out in combination with the characteristics of Chinese enterprises, and a lot of research results have been obtained.

This thesis summarizes the research status-quo of motivation factors from three perspectives: dimension division of motivation factors, quantitative study of motivation factors and preference of different variables for motivation factors.

2.2.1 Dimension division of motivation factors

In his two-factor theory, American psychologist Herzberg (1959) classified the factors that affect employee's work enthusiasm and satisfaction into motivational factors and hygiene factors. Motivation factors are mostly related to jobs, including sense of achievement, recognition, promotion, personal growth, the job itself, etc. Hygiene factors are mostly unrelated to work, including corporate policy, relationships with supervisors, colleagues and subordinates, personal life, working conditions, pay and benefits, job security, and so on.

Heimovics and Brown (1976) presented 15 main motivation factors related to the work of the employees: high pay, opportunities for promotion, opportunities for learning new skills, good prospects, opportunities to contribute to society, opportunities to show strengths, opportunities to practice leadership, opportunities to participate in important decisions, independent work, freedom from supervision, good interpersonal relationships, full job assignments, respected social status, opportunities to participate in recreational activities and a good atmosphere of teamwork.

Furnham, Forde, and Ferrari (1999) listed 18 employee motivation factors in their study, and classified them into two categories according to the two-factor theory, in which hygiene factors include job security, supervision, convenient working hours, working status, opportunities to communicate with people, good benefits, relationships with colleagues, good pay and working conditions, and motivational factors include opportunities for self-growth, full display of ability, recognition of outstanding completion of job, job responsibility, sense of achievement, working environment, an interesting job, opportunities for promotion and the importance of the job.

Little (1998) proposed four motivation factors that can motivate employees effectively: (1) Sense of work commitment. When employees devote themselves to a job and feel they have the opportunity to contribute to the organization, he can obtain a lot of motivation effect; (2) Money, including the pay and related benefits received by employees. Reasonable pay and benefits can provide effective motivations to employees; (3) Effective management. Scientific and effective

management can make employees free from the interference of a lot of troublesome factors, so that the staff can work more smoothly; (4) A good working atmosphere, including a good working team, a good boss, and good colleagues and subordinates. A good working environment can make employees work more happily. An effective motivation strategy can make employees work harder and improve the efficiency of enterprise management.

Skaff (2012) interviewed eight employees and managers in Beirut district and suburbs and recognized eleven motivation factors, including dissatisfaction, stress, low salaries, disrespect, economic/political conditions, managers with Theory X approach, lack of employee empowerment, extrinsic motivation, overconfident managers, task orientation and change of mentality. Zaback (2016) surveyed factors that influence individual motivational differences and engagement among public service employees within the Delaware Division of Developmental Disabilities Services. The data were analyzed and the results determined that interest, recognition and independence were rated as the most influential motivational factors.

Khoshnevis (2016) proved the impact of motivational factors of Herzberg's model on job satisfaction of middle managers. These factors were embracing the opinions of other employees, job evaluation, hope to advance, becoming more autonomous in affairs, specifying the limits and duties, creating a sense of belonging to organizational objectives, giving more employee freedom of choice and discretion, paying attention to innovation, endeavoring work, removing the tight control, more desirability of work, authorities' moral support and encouragement, the relevance of job to expertise, and on-the-job training.

Zingheim and Schuster (2001) put forward four key motivation factors that should arouse the attention of future enterprises: (1) Attractive enterprise development prospects. The bright development prospects of an enterprise can firmly attract the employees it needs, so that they can feel able to meet their needs in the enterprise; (2) Personal growth. Enterprises provide employees with a good training system, and help employees to plan their career development, so that they can continuously promote their own ability and obtain their personal growth; (3) A positive and good working environment. The enterprise has a good working atmosphere and

working environment, so that the employees work willingly and derive pleasure from the work; (4) A comprehensive compensation strategy, including attractive pay, benefits, additional rewards (such as cash, stocks, etc.), and recognition and commendation for work.

As a matter of fact, various measurement index factors in the employee satisfaction scales commonly used in foreign countries also correspond to the motivation factors of the employees. Therefore, the motivation factors of employees can also be derived from the indexes of these scales: (1) The dimension of reward from work, including job recognition, sense of career achievement, pay and benefits and promotion opportunities; (2) The dimension of the job itself, including job fitness, job matching, job challenge and job competency; (3) The dimension of working environment, including working conditions, working hours and workplaces; (4) The dimension of work group, including leadership trust, communication and information openness; (5) The dimension of the enterprise itself, including corporate culture, participation in management, and rules and regulations (Bai, Zhang, & Zhang, 2002). Petroni and Colacino (2008) by taking 376 engineers as samples, put forward three factors that affect knowledge-based employees, including career satisfaction, job satisfaction and organizational satisfaction.

Many domestic scholars draw on foreign research achievements and study the dimension division of employee motivation factors in Chinese enterprises according to the specific characteristics of employees in China. Zhu, Wu, and Feng (2001) designed a research scale for Chinese enterprise employees. The motivation factors proposed by them include: sense of job fulfillment, job challenge, job responsibility, full display of ability, and interest in work, application of learning at work, sense of achievement, reward from work, good relationships with colleagues, reasonable job promotion system, satisfactory benefit system, ability improvement at work, etc.

Jiang and Xue (2001) put forward a hierarchical model of motivation factors for scientific and technological personnel in enterprises. In this hierarchical model of motivation factors, they divided the motivation factors of scientific and technological personnel in Chinese

enterprises into four levels: The first level represents all the major motivation factors that arouse the attention of the technical personnel of the enterprises. The second level consists of material motivation and spiritual motivation. The third level includes traditional remuneration, equity, personal development opportunities, work content suitability, and working atmosphere. The fourth level includes 14 specific motivation factors: salary, bonus, benefits, stock options, technical stocks, promotion, training, job content's conformity to personal requirements, job challenges, sense of achievement from work, teamwork, participation in decision-making, job freedom and working facilities, etc.

Xu (2008) put forward seven motivation factors for knowledge-based employees in China's foreign-funded enterprises, including personal growth factor, salary factor, team relationship factor, job content factor, company development factor and work environment factor. With knowledge-based employees born in the 1980s as the research object, Yang (2008) divided 30 motivation factors of knowledge-based employees into four dimensions through factor analysis: reward from work, job tasks, working atmosphere and enterprise conditions. Chen (2010) divided employees' motivation into four dimensions: mindset, task motivation, personal expertise and creativity. Cheng (2010) sort out the individual motivators by statistical analysis and 5 motivators are indentified in the end. They are working environment, working compatible degree, working repay, the leadership and the work itself. Yi (2010) believed that the motivation mechanism for knowledge-based employees in high-tech enterprises should be constructed from salary motivation, work motivation, growth motivation and enterprise culture motivation. Hou and Wang (2011) divided the 20 motivation factors of knowledge-based employees into five dimensions through factor analysis: job autonomy, salary and benefits, personal development, working environment and work achievement. Tang (2011) believed that employees should be motivated from six aspects: material, work design, enterprise culture, organizational environment, personal growth and development, and system contract. Yang (2011) divided the need for motivation into five dimensions: money, job achievement, job autonomy, personal growth and development, and corporate culture.

Xiong and Qu (2012) used the questionnaire to study the motivation factor system of knowledge workers in Chinese enterprises. The main research object is the knowledge workers in the petroleum industry. Based on the analysis of 287 questionnaires collected, it is believed that the motivation factor system of knowledge workers has seven dimensions: economic factors, growth factors, mental factors, leadership factors, environmental factors, work factors, and management factors. Of them, the economic factors include salary, bonuses, employee benefits, equity motivation and profit sharing; growth factors include career development planning, career prospects, degree of recognition, knowledge renewal, skills training, interpersonal relationships and corporate prospects; mental factors include character, sense of mission, respect, trust, care, education of three outlooks, honor and reputation; typical leadership factors include courage to admit mistakes, setting an example, tolerance, knowledge and skills, personality charm; environmental factors include the corporate culture, crisis effects, internal conflict between parties, employment and external environment of the enterprise; work factors include post matching, work autonomy, challenge, work stress, team building, personal safety, labor will, work goals, beauty of the environment, working conditions, job stability and safety; management factors include the system construction, employee engagement, communication, fairness and performance evaluation. This study is one of the more complete researches on the motivation systems in China.

Based on the total compensation model, Zhang, Ning, and Wang (2014) divided the motivation factors of knowledge workers into five dimensions, namely personal income, welfare benefits, personal life, performance evaluation and personal development. Of them, personal income includes salary and equitable treatment; personal life includes living needs, family pressure, back-feeding work and work stress; performance evaluation includes work achievement, performance fairness, job recognition and job competency; personal development includes training and learning, participation in management, corporate prospects and post promotion. Through the study, it has been found that compared with the traditional employees, knowledge workers are more concerned about equitable treatment, performance

fairness, corporate prospects, living needs and work achievements, etc. Shi and Han (2014), based on Herzberg's two-factor theory and by synthesizing the research results of other experts and scholars at home and abroad, divided motivation factors into three dimensions-work motivation dimension, peripheral motivation dimension and environmental motivation dimension.

Su and Li (2015) divided the motivation factors of knowledge workers into five dimensions: growth motivation, welfare benefits, team relationships, organizational climate and achievement motivation. Of them, growth motivation include work autonomy, equity motivation, participation in management, development space and training sessions; benefits include salary, bonuses, welfare benefits, residential settlement and work safety; team relationships include the teamwork, interpersonal relationships, communication channels and leaders' encouragement; organizational climate includes management systems, performance evaluation, corporate prospects, work environment and corporate culture; achievement motivation include the social status, exertion of competence, work achievements, and work challenges. Through empirical analysis, it has been found that the most important motivation for knowledge workers are development space, exertion of competence, corporate prospects, teamwork, salary and bonuses.

By reference to Maslow's hierarchy of needs, Li (2016) divided the motivation factors into five dimensions: safety guarantee, working atmosphere, esteem needs, self-actualization and organizational platform. Of them, safety guarantee includes salary and benefits, work-life balance and job stability; the working atmosphere includes work environment and interpersonal relationships; esteem needs include work recognition, participation in management and work autonomy; self-actualization includes personal growth, learning and training, work challenge and work achievements; organizational platform includes the corporate development prospects, organizational justice, institutional culture and leadership qualities. Through research, it has been found that the new-generation knowledge workers are most concerned about salary and benefits, personal growth and organizational justice.

In conclusion, domestic and foreign scholars put forward many dimension division means of motivation factors. Based on the summarization of the dimension divisions of motivation factors in previous studies, the motivation factors can be divided into five aspects: (1) the factors related to the reward from work, mainly including the factors of salary and benefits, reflecting the employees' demand for material and financial rewards from hard work; (2) the factors related to personal growth, chiefly including ability display, career development and sense of job achievement, reflecting the needs of employees to continuously explore their potentials and improve their ability and career development; (3) factors related to the job itself, including job nature, job recognition, job competence, job status, job responsibility, job challenge and job autonomy, etc., reflecting the employees' needs in all aspects of the job they are engaged in and their specific feelings in their actual work. (4) the factors related to the working atmosphere, including the relationship with the boss, subordinates and colleagues, the quality of the leadership, the concern of the leadership for the employees, teamwork, the exchange and communication, and participation in management, etc., reflecting the needs of employees for the humanistic environment in which they work; (5) factors related to external conditions, mainly including working conditions, company management, development prospects, personal life and social status, reflecting the employees' feelings and needs for external working conditions. The motivation factors mentioned above have important theoretical reference significance for the design of questionnaire survey and personnel interview in this study.

2.2.2 Quantitative study on motivation factors

In the study of motivation factors, Chinese and foreign scholars have further done a lot of quantitative research and obtained a lot of useful research results, from which we can derive the comparison of the importance of motivation factors.

Tampoe (1989) did a lot of qualitative and quantitative research on motivation of knowledge-based employees. He did a large-sample questionnaire survey for knowledge-based employees of R & D institutions, design companies and engineering companies, and then made

statistical analysis to the returned questionnaires, and obtained the four most important motivation factors for knowledge-based employees by ranking their importance: (1) individual growth (33.74%), that is, the existence of opportunities to enable individuals to realize their potential, which confirms such a hypothesis. Knowledge-based employees have a constant pursuit of knowledge and individual and career growth; (2) Job autonomy (30.51%), that is, the establishment of a working environment in which knowledge-based employees can complete the tasks assigned to them within the framework of established strategic directions and self-evaluation indexes; (3) Business achievement (28.69%), that is, the completed job performance reaches a level and a quality standard the employees take pride in, which is linked to the needs of the organization; (4) Money wealth (7.07%). The employees can obtain a reward commensurate with their own contribution and can share the wealth they have created, and this motivation system is both appropriate for the development of the company and linked to individual performance.

AXA Consulting Co., Ltd. in USA (1994), in cooperation with Australian Graduate School of Management (AGSM), comparatively studied 858 employees in various industries in Australia, the United States and Japan through work satisfaction survey, including front-line service employees, sales staff and knowledge-based employees, and obtained the most important five motivation factors for knowledge-based employees: job reward, job nature, promotion, relationship with colleagues and influence on decision-making. On the other hand, it is derived from the research that knowledge-based employees pay more attention to job nature, relationship with colleagues and participation in and influence on decision-making than other employees.

In its investigation and research on employee motivation factors, McKinsey Management Consulting Co., Ltd. (Chambers, Funk, & Handfield, 1998) investigated 200 senior executives from 77 different industries, and listed the key factors to motivate employees, and drew some conclusions accordingly. They divided employee motivation factors into three dimensions: the enterprise factors, the factors of the job itself, and the factors of salary and lifestyle, and ranked

the motivation factors in various dimensions according to the degree of importance. In the dimension of enterprise motivation factors, the three most important motivation factors are enterprise value and corporate culture (58%), advanced management system (50%) and challenging enterprise (39%). In the dimension of the job itself, the three most important motivation factors are job freedom and autonomy (56%), job challenge (51%) and career development and progress (39%). However, in the dimension of salary and lifestyle factors, the salary factor is very important, but the importance of various motivation factors is not as high as that in the first two dimensions.

Peng and Zhang (2001) successively did a questionnaire survey and a comparative study to 150 R&D personnel in Shenzhen Huawei Technology Co., Ltd, China Motion Telecom Co., Ltd. in Shenzhen, China Public Information Network, and Information Engineering General Research Center of the Ministry of Information Industry and 150 mobile phone sales and customer service personnel in Telling Communication Development Co., Ltd. in Shenzhen. The research findings show that the top five motivation factors of Chinese knowledge-based employees are salary and reward (31.9%), personal growth and work (23.9%), challenging work (10.1%), and company prospect (8.0%) and job security and stability (6.5%). A conclusion can be derived from the research findings that the motivation of knowledge-based employees should not be based on monetary stimulation, but should be combined with their development, achievement and growth.

Zheng and Huang (2001) investigated 426 knowledge-based employees in Jianghuai Aeronautical Instrumentation Factory, Hefei Wan'an Machinery Factory, West Anhui Machinery Factory, Anhui Hongxing Machinery Factory, Anhui Dongfeng Machinery Factory and other state-owned enterprises, and found out the ranking order of motivation factors of knowledge-based employees in state-owned enterprises: money wealth (48.12%), personal development (23.71%), business achievement (22.30%) and job autonomy (5.87%). There is a significant difference between this result and the research conclusion of Tampoe. Wen and Wu (2003) did a questionnaire survey to 29 senior executives and 397 employees in 27 software and

biopharmaceutical companies in Beijing, and found out through due analysis the top five motivation factors which have a predominant effect on knowledge-based employees in high-tech enterprises: individual growth (45%), business achievement (20%), money wealth (19%), job autonomy (8%), and interpersonal relationship (8%). Wen (2004) found out that the most important motivation factors for knowledge employees are company prospect (25.45%), salary and welfare (15.45%), training and learning (8.18%), ability development (8.18%), work interest (6.36%), leadership quality (5.45%), teamwork (4.55%) and work achievement (4.55%). Wang (2007) conducted an interview and questionnaire survey to 290 knowledge-based employees in IT enterprises in Beijing, and found out through due analysis the top five motivation factors which have a predominant effect on knowledge-based employees: salary and benefits (28%), training and learning (20.5%), ability display (12.7%), promotion (11.2%), and company prospect (7.6%).

Yang, Yang, and Yi (2008) conducted a questionnaire survey among 327 knowledge workers who were engaged in management and technical work in 10 enterprises in Guangzhou. According to the analysis and research, from the perspective of expectation, the top five effective non-economic factors for motivation of the knowledge workers are promotion, job interest, participation in management, teamwork and work achievement. From the perspective of actual motivation, the top five effective non-economic factors for the actual motivation of knowledge workers are: corporate prospects, corporate culture, work challenges, exertion of competence and work achievements. Through this research, it shows that the actual motivation level of various non-economic factors is different from the expectation level of employees. It is necessary for corporate managers to pay attention to adjusting the non-economic motivation policies in practice and increasing the utilization of such motivation measures as promotion, job interest, participation in management and teamwork, etc. Jin (2008) found out that employees in western China most value the five motivation: salary, training and further study, career planning, welfare security after retirement, promotion.

Wang (2008) took the knowledge-based employees in non-listed agricultural high-tech

enterprises in Xi'an and Yang Ling as the empirical research object, and found out, through the analysis of the questionnaire data, the top five motivation factors of the knowledge-based employees: salary and benefits, leadership quality, personal development, enterprise development and security, and found out, through network survey, the top five motivation factors of the knowledge-based employees: salary and benefits, personal development, leadership quality, fairness and justice and enterprise development. Huang and Chen (2009) believed that the most important motivation factors for knowledge-based employees in IT enterprises are self-development, job autonomy, job achievement, fairness and justice, respect and participation. Zhang, Fan, and Wang (2011) investigated 360 employees from five limited liability companies of electronic materials in Dongguan, including Shuoyuan and Lixin. Through mathematical analysis with SPSS statistical software, they found out the most important motivation factors in the eyes of knowledge-based employees: salary and benefits, ability display, company prospect, job security and leadership quality. These five motivations accounted for 76.4% of all options, while the remaining 15 factors accounted for only 23.6% of the total.

By summarizing the research results from home and abroad, we can find out that the ranking order of the importance of motivation factors is not always the same, but we can also find out some motivation factors that are generally valued by employees. We can generalize the most important motivation factors in the eyes of employees as follows: (1) Salary motivation factors. Employees always hope to obtain a reward corresponding to their contribution, so competitive compensation has always been the motivation factor that arouses the high attention of employees; (2) Personal growth factors. If individuals continue to acquire new skills, fully display their ability, and obtain good opportunities for their career promotion, they can be vigorously motivated to work hard, which is also the embodiment of self-actualization demand in Maslow's demand hierarchy theory; (3) The factors of job nature. Employees tend to like the jobs matching their individual ability and interest. Therefore, matching jobs tend to promote the ability display and the personal development of employees, and play an important role of

motivation in improving the enthusiasm of employees in work; (4) The factors of job security. It is very important for the long term development of employees to be engaged in stable and fully-guaranteed jobs. Employees also value these factors highly. By effectively satisfying these motivational factors, we can arouse the enthusiasm of employees in work and encourage them to work hard. The synthesis of the previous research results can significantly enlighten the research on motivation factors in this thesis, as the theoretical basis for the design of motivation models in this thesis.

2.2.3 The preferences of different variables for motivation factors

During their studies, Chinese and foreign scholars found out that there are many factors which can produce motivation effects, but different employees have different preferences for motivation factors, subject to different internal factors and external environments (called different variables). Scholars have done a lot of research on employees' preferences for motivation factors under different variables, and have achieved a series of results.

American management scientist Hunt (1987) pointed out in his study that employees' motivation needs vary with the nature of their jobs, their skill level and the material living conditions of their families. Therefore, while studying employee motivation, we should consider the different impacts of these variables on employee motivation needs and motivation effects. Tampoe (1989) held the opinion during his research that knowledge-based employees had needs of different intensities to their motivation factors at different stages of their career development. At the early stage of their career, they pay more attention to the motivation of money wealth, but their focus begins to shift to individual growth at the stage of career development. With the lapse of time, after their career enters a stable stage, they pay more attention to the motivation of business achievement. Vinokur-Kaplan, Jayaratne, and Chess (1994) did a comparative study of the impact of various motivation factors on the job satisfaction of employees in the utilities sector, private enterprises and the non-profit sector. They found out that promotion opportunities and job challenges had a greater impact on the job satisfaction of employees in the utilities and non-profit sectors than on the job satisfaction of

employees in private enterprises. Zhang (2009) believed that the main motivation factors for knowledge-based employees in IT enterprises are personal development, work and remuneration. Age, educational background, position level and working years have significant influence on the actual feelings of various types of motivation factors, while gender and temperament type have no significant influence. Yatsuzuka, Taguchi, and Table (2009) ranked motivation factors by the degree to which they enhanced employee motivation in the workplace and selected concrete improvement factors that can be recommended as high-priority motivation factors for adoption by companies seeking to improve the motivation of their employees. A mixed quantitative comparative methodology addressing Baby Boomers, Generation X, and Generation Y employees in the financial services industry were surveyed to examine differences among the generations regarding motivational factors. Moody (2007) found that motivational factors are statistically significantly different for baby boomers, generation Xers, and generation Yers. Mocny (2010) explored the effect on employee job satisfaction after a merger involving a for-profit and a non-profit company. The results showed the group of employees, Regular Education Teacher/Aide, who are most dissatisfied with aspects of the merger.

Based on their comparative analysis to the degrees of preferences for various motivation factors among knowledge-based employees at different age levels, at different education levels and of different genders, Zheng and Huang (2001) found out that there are obvious differences among the degrees of preferences of knowledge-based employees for various motivation factors under different background factors. Younger knowledge-based employees pay more attention to the motivation factors of personal development and business achievement, while older knowledge-based employees pay more attention to the motivation effects of money income. Knowledge-based employees with a higher education level pay more attention to the motivation effects of personal development, while knowledge-based employees with a lower education level pay more attention to money income. With regard to different genders, females pay more attention to income, while males pay more attention to personal development.

Chen and Jing (2005) distributed questionnaires among the four central research institutions in Sichuan and the provincial research institutions in Sichuan, and found out through data analysis the four major motivation factors of Chinese knowledge-based employees: business achievements, working environment, pay and benefits and personal growth. Knowledge-based employees have different preferences for motivation factors under different variables. Senior knowledge-based employees pay more attention to the motivation of business achievements. Intermediate knowledge-based employees pay more attention to the motivation of working environment. Junior knowledge-based employees pay more attention to the motivation of pay and benefits. With regard to knowledge-based employees aged 20-29, pay and benefits and personal growth factors have stronger motivation effects. With regard to knowledge-based employees aged 30-39, pay and benefits have stronger motivation effects. Knowledge-based employees at the level of undergraduate education have stronger demands for personal growth. Business achievements and personal growth have an obvious motivation effect on knowledge-based employees at the education level of master degree or above. There is not obvious difference between different genders in the demands for various motivation factors.

Guan and Zhao (2006) did a questionnaire survey on knowledge-based employees in five types of high-tech enterprises by dividing them into technical, management and marketing employees, and found out that they had different preferences for several major motivation factors including salary reward, teamwork, promotion, corporate culture, career development and training, and valuable and challenging jobs, but they all gave top priority to the motivation of salary reward. Li and Wang (2009) analyzed the questionnaires of 500 knowledge-based employees in 13 companies and concluded that the most important motivation factors of knowledge-based employees were income, personal development, job autonomy and business achievement. In terms of preferences for motivation factors, males tend to pursue personal development, while females tend to pay more attention to income. The lower the age, the lower the income, but the stronger the tendency and demand for pursuing personal development.

By summarizing the previous research conclusions, we can find out that the variables of

preferences for employee motivation factors can be classified into two categories: (1) variables of external environment which mainly reflect the background of employees' working environment, including the nature of the enterprise, industry differences, and cultural background; (2) variables of internal environment which mainly reflect the individual background characteristics of employees, including the nature of the job, gender, age, degree of education, income level, job level and work-post. This enlightens us: while designing motivation models, we should respectively formulate motivation countermeasures for employees by taking different background characteristics into account, so as to arouse employees' enthusiasm in work.

2.2.4 Summary of research review

By sorting out and summing up the research of motivation factors at home and abroad, we can reach the following conclusions: (1) Both domestic and foreign scholars attach importance to quantitative research on motivation factors, and generally use questionnaires and interviews to conduct empirical analysis; (2) Domestic and foreign scholars almost reach the same research conclusion on the importance of motivation factors. The main motivation factors include compensation, personal growth, job achievement, job security, job autonomy, enterprise development, fairness, etc. These motivation factors are also applicable to engineering technological enterprises, reflecting the internal needs of their employees; (3) Due to the differences in social development and material living standards at home and abroad, there are some differences in the ranking of importance of motivation factors among domestic employees, especially in the factor of salary motivation. Therefore, we must combine the actual situation of China with the specific needs of the employees for study and discussion, and should not directly copy the foreign research results to Chinese employees; (4) Previous studies have explored employee preferences for motivation factors under different variable characteristics such as gender, age, educational background, income level, industry background and enterprise nature. However, little research has been done on motivation factors under the background characteristics of engineering technological state-owned enterprises. This thesis will, by

drawing on the previous research results on the motivation factors, study the motivation factors of the engineering technological state-owned enterprises and further enrich the research results of motivation factors.

2.3 Definition of related concepts

2.3.1 Concept of engineering technology-oriented state-owned enterprises

Engineering technology refers to the application of research results of scientific knowledge or technological development to industrial production so as to achieve the goal of transforming the nature. The engineering technology referred to in this thesis refers to the engineering technology related to the construction industry, that is, the production and service process that starts around the survey, design, construction, supervision, and project management of the construction industry.

State-owned enterprises refer to the socialist commodity production and operation units, which are solely responsible for their management decisions, profits and losses under an independent accounting system. In addition, their all or the substantial means of production are owned by the state. The Chinese law on state-owned assets equates state-owned enterprises with state-funded enterprises, including wholly state-owned companies, state-controlled companies and state-participating companies.

Jin (2001) pointed out that although the share of state-owned enterprises in China's enterprises was relatively small, it played a key role in the national economy. In the context of different times, with the continuous development of the national economy, its functions and responsibilities were also constantly changing. Huang (2002) believed that state-owned enterprises should be defined in accordance with the company law. That is, in a certain company (including state-controlled enterprises listed on domestic and foreign stock exchanges), China's assets had a higher proportion of total assets than other capitals. Such company could be called a state-owned enterprise. Jin and Huang (2005) proposed that

state-owned enterprises are profitable and beneficial to the public, and enterprises took production and management as their main behaviors. Profitability was reflected in the pursuit of performance and interests, and public welfare was reflected in the social benefits. During its operation, the state-owned enterprise showed the will of the state to certain degree and sought to benefit the people.

To sum up, the engineering technology-oriented state-owned enterprises studied in this thesis refer to the independent business units partially invested or controlled by the government, which are aimed at offering the comprehensive services related to the construction engineering technology.

2.4 Summary of this chapter

This chapter first summarizes the relevant content-based motivation theory, process-based motivation theory, behavior modification motivation theory and comprehensive motivation theory to provide a theoretical basis for the follow-up study.

Then, it reviews the domestic and international research on motivation factors, and obtains the research results on the main factors that motivate the personnel from three perspectives: dimension division of motivation factors, quantitative study of motivation factors and preference of different variables for motivation factors, and provides references for the study of motivation factors in this thesis.

Finally, with reference to the research of other scholars, this thesis defines the concepts of engineering technology-oriented state-owned enterprises.

Chapter 3: Research Object

Taking CSADI Engineering & Technology Co., Ltd., an engineering and technology-oriented enterprise owned by the state as the study case, this thesis introduces the basic situation of the company from three aspects: the company's profile, the company's business sector and the company's personnel structure.

3.1 Profile of CSADI Engineering & Technology Co., Ltd.

Established in 2011, CSADI Engineering & Technology Co., Ltd. is a wholly-owned subsidiary of Central-Southern China Engineering Consulting and Design Group. With an independent legal person and a registered capital of RMB 50 million, it is a small and medium-sized state-owned enterprise at its early stage of development. The company integrates various specialties into a whole by taking its parent company's strong design and consulting strength as its solid backing and has a number of architects, structure engineers, constructors, cost engineers and supervision engineers with national certification and registration. Its business scope covers engineering general contracting, mechanical and electrical engineering, intelligent engineering, fire protection engineering, decoration engineering, garden engineering, cost consulting, project management, engineering supervision and so on.

The company executes strict management and a rigorous work style. It has passed ISO9001:2008 quality management system certification, ISO14001:2004 environmental management system certification and OHSAS18001:2007 occupational health and safety management system certification, in the meanwhile, it is provided with experienced project management and construction teams in various fields, able to implement strict management of the entire process of design, procurement, construction and service to ensure the quality of project construction.

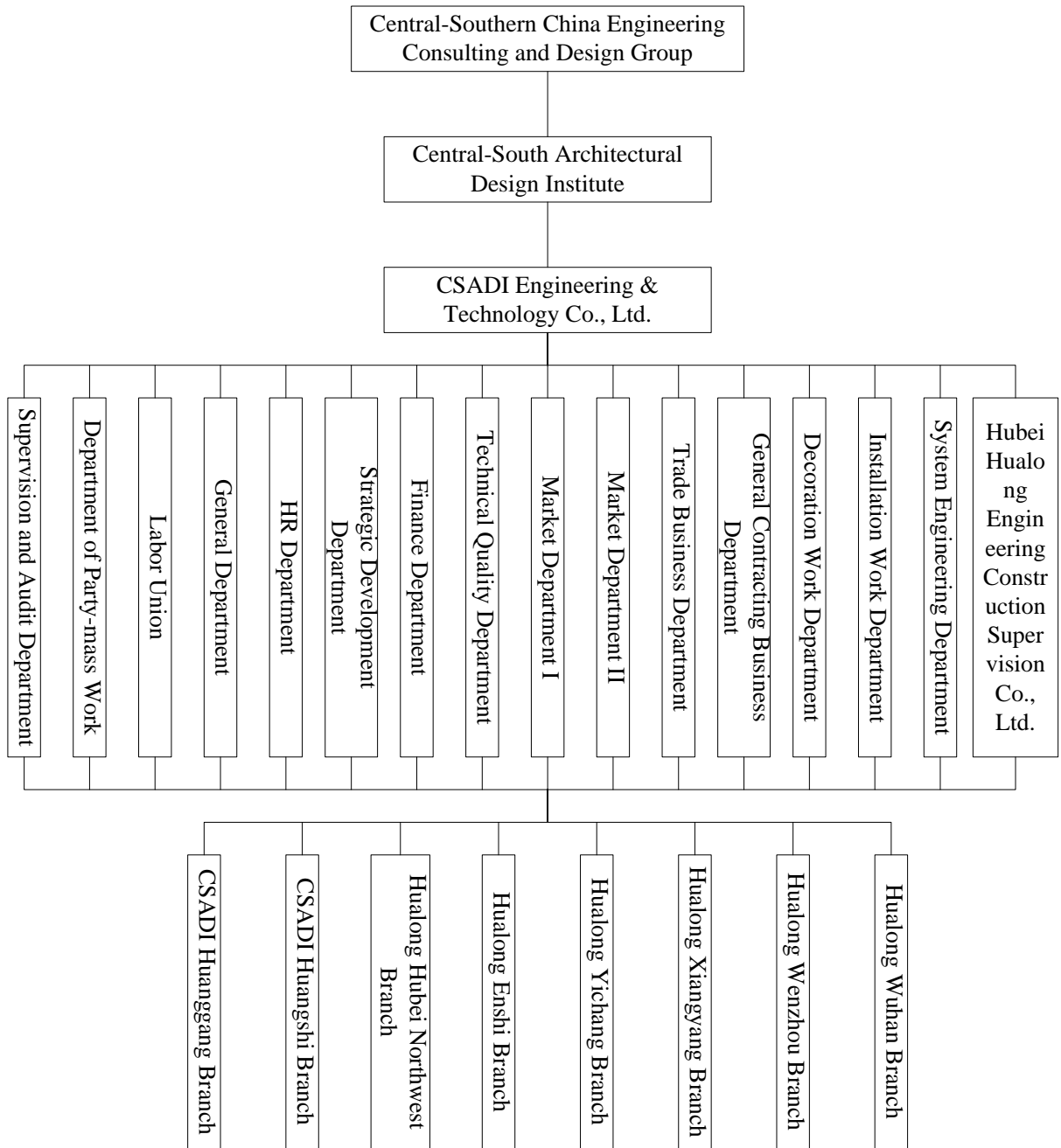


Figure 3-1 Organization chart of CSADI Engineering & Technology Co., Ltd.

CSADI Engineering & Technology Co., Ltd. upholds the enterprise spirit of “Enriching before Developing; Pursuing Integrity and Excellence”, and always adheres to market-oriented and innovation-driven. It firmly grasps the business philosophy of development in competition and win-win in cooperation, fully integrates the industrial chain, increases economies of scale, strives to achieve leapfrog development. With great ambition and the dream of soaring effortlessly, the vigorous CSADI staff has been striving to build the company into a

comprehensive project contracting and technical consultancy company with market core competitiveness, led by the engineering general contracting, based on project management and engineering supervision, under the coordinated development of mechanical and electrical engineering, intelligent engineering, fire protection engineering, decoration engineering, garden engineering and other specialized contracting projects. At present, the company has 16 departments, 8 branches and 1 subsidiary, as shown in Figure 3-1.

3.2 Business segments of the company

Although not a long-established company, CSADI Engineering & Technology Co., Ltd. has developed rapidly. Currently it owns nine categories of qualifications, namely, grade 2 general contracting for building engineering construction, grade 2 general contracting for municipal public works construction, grade 1 professional contracting for electronic and intelligent engineering, grade 1 professional contracting for fire control facilities engineering, grade 2 professional contracting for building decoration engineering, grade 1 professional contracting for building mechanical and electrical installation engineering, grade 3 urban landscaping, grade A building construction project supervision, grade A municipal public works supervision and grade A civil air defense engineering construction supervision. Its business scope involves general contracting, mechanical and electrical installation, weak current communication, fire engineering, decoration engineering, landscape engineering, engineering supervision, trade management, cost consulting, project management, engineering supervision and other fields.

The company has grown rapidly since its foundation and has achieved a number of achievements in the fields of building mechanical and electrical installation engineering, electronic and intelligent engineering, engineering construction supervision, engineering consulting and project management, including the Mechanical and Electrical Installation Project of Food Logistics Park at Wuhan Donghu High-tech Zone Integrated Free Trade Zone as the largest and most specialized food bonded processing base in Central China, and the

Yangtze River Channel Key Laboratory Construction Supervision Project which won the “China Steel Structure Gold Award”. Among them, Hubei Hualong Engineering Construction Supervision Co., Ltd. is a subsidiary of CSADI Engineering & Technology Co., Ltd.. With the longest operation time and the largest scale of engineering supervision business, it is an important part of CSADI Engineering & Technology Co., Ltd. at present.

3.3 Personnel structure of the company

CSADI Engineering & Technology Co., Ltd., based on the people-oriented concept, implements the idea that every employee has a suitable position and actively establishes a sound incentive mechanism to provide employees with a broad development platform and comfortable working and living environment and achieve the common growth and progress of both employees and the company. By the beginning of 2017, the company had 354 employees, including 6 senior managers, 27 personnel in functional departments, 23 marketing personnel and 304 technical personnel. technical personnel include personnel in such business segments as decoration (3), general contracting (5), municipal works (landscaping) (5), installation (21), supervision (266), as shown in Figure 3-2.

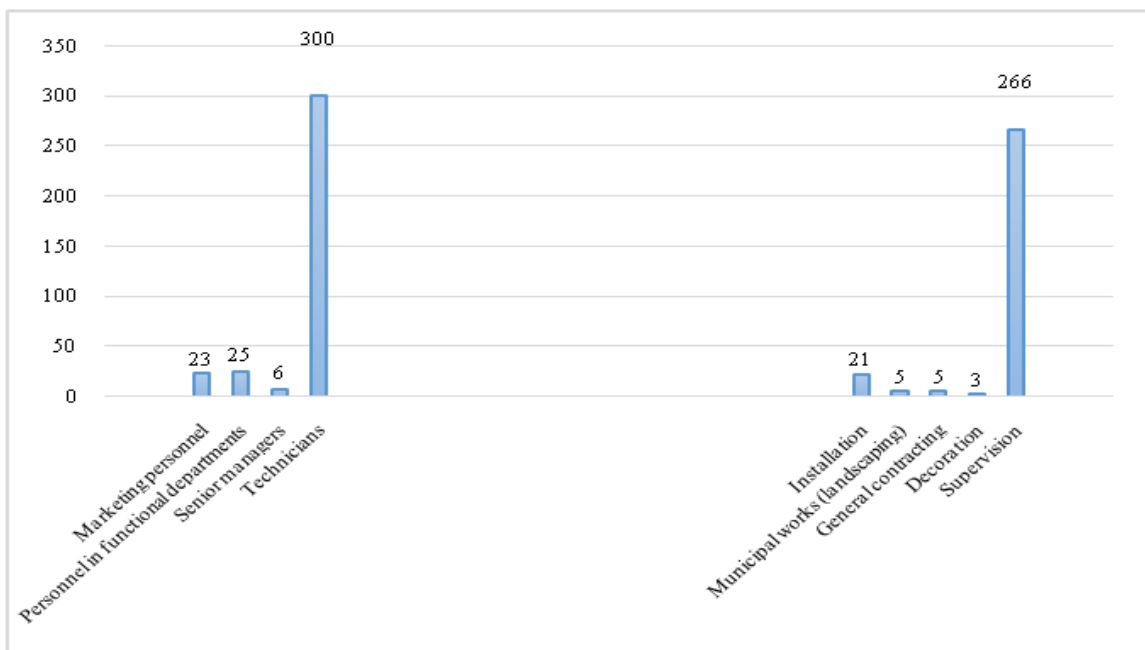


Figure 3-2 Personnel structure of CSADI Engineering & Technology Co., Ltd.

As can be seen from the personnel composition, the company has invested more technical personnel in supervision than in other business segments, reaching 88.7% of the total number of technicians. This is because supervision business is CSADI's earliest segment with the establishment of a subsidiary, representing a relatively big scale and high maturity, and complete staffing, while other segments are still at the initial stage of development and staffing needs to be further improved.

The basic situation of the company's personnel is shown in Figure 3-3. The majority of employees are male, accounting for 81.1% of the total. 77.7% of the employees are married. 117 are aged 35 and below, 85 aged 35-50 and 157 over 50 years old, in addition, 10 employees with postgraduate and above qualifications, 60 with undergraduate qualifications, and 284 with junior college and below qualifications. Therefore, the company's personnel are at all ages and education levels, and can meet its current development needs.

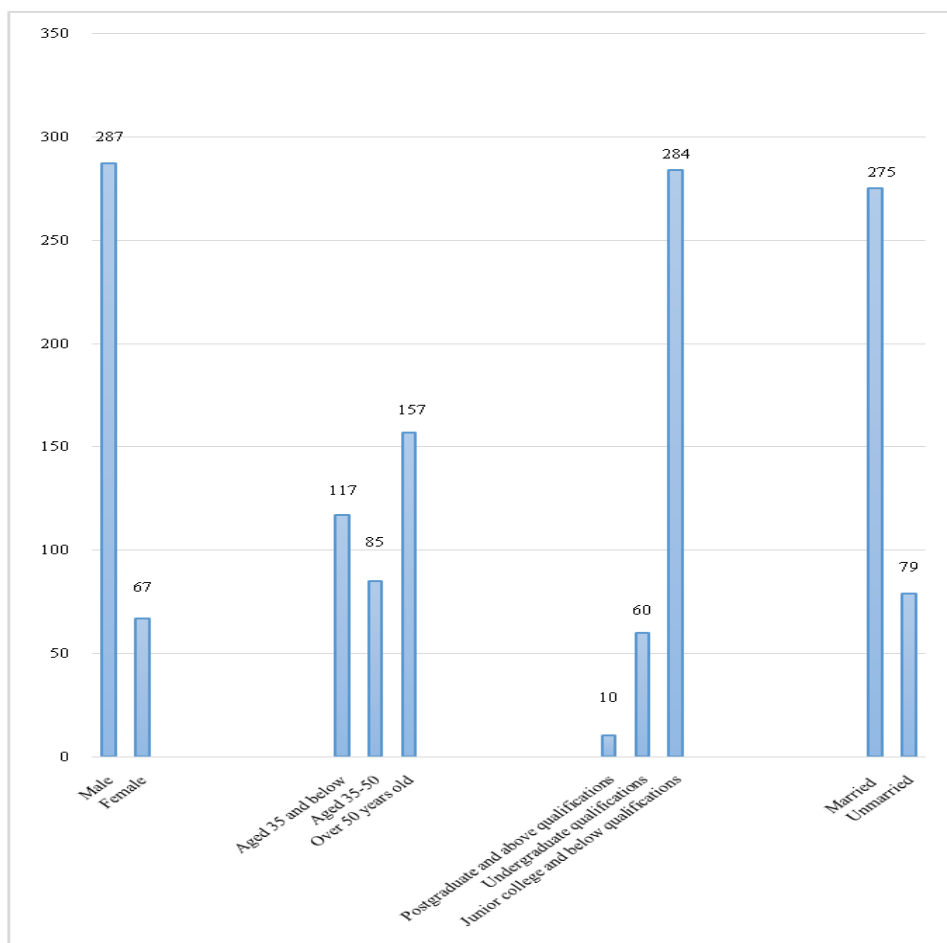


Figure 3-3 Basic situation of the personnel of CSADI Engineering & Technology Co., Ltd.

CSADI's staff is divided into 6 levels, namely, top management (6), chief engineers (4), directors (13), deputy directors (12), supervisors (20) and general employees (299). Among them, there are 12, 66, and 9 persons with senior, middle and junior professional titles respectively. At present, 110 employees have worked in the company for more than 5 years, 92 for 3-5 years, 109 for 1-3 years, and 43 for less than 1 year. The company adds 43 personnel in the recent year. This shows that since the establishment of the company in 2011, personnel have been continuously enriched and improved, as shown in Figure 3-4.

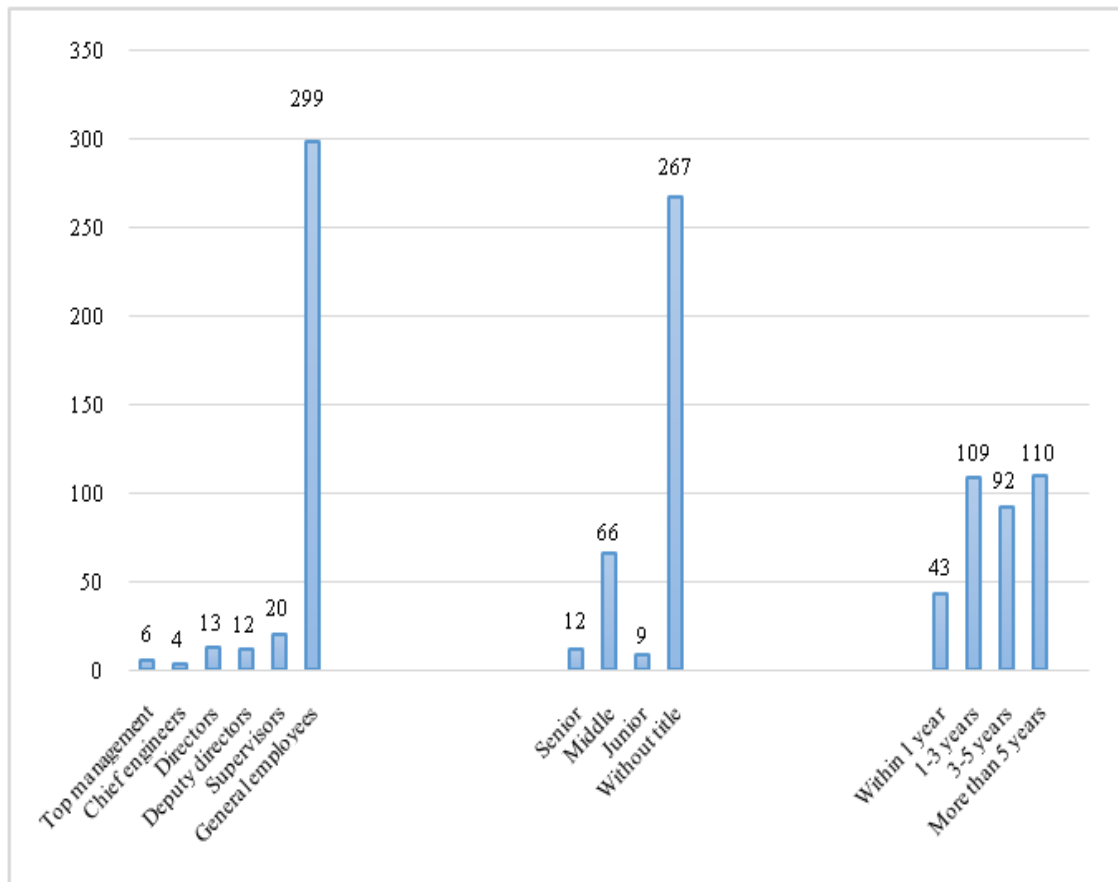


Figure 3-4 The levels, professional titles and working years of the personnel of CSADI Engineering & Technology Co., Ltd.

3.4 Summary of this chapter

This chapter introduces the relevant situation of this thesis research object, CSADI Engineering & Technology Co., Ltd.. First of all, this chapter briefly introduces the company, and introduces the company's strength and related development concepts. Then, it introduces

the company's business sector and some typical achievements. Finally, the company's personnel structure is introduced from the aspects of gender, age, marital status, educational background, professional title, post type and working years.

Chapter 4: Research Design

The research of this thesis takes the state-owned enterprise, CSADI Engineering & Technology Co., Ltd. as an example for the research of motivation factors and mechanism. It conducts the preliminary research and formal research. The preliminary research to adopt satisfaction survey of the company was conducted to find out the problem with the existing motivation model and mechanism, and it would be the fundamental to the formal research. Through the questionnaire study, I conduct the further formal research of the motivation factors to create the motivation model and mechanism which can be tested to validation to the company motivation system.

4.1 Research method

4.1.1 Selection of research method

The research of this thesis includes preliminary research and formal research. Preliminary research adopts motivation factors survey, see Appendix I. A motivation factors survey of the company's existing motivation mode was conducted to find out the problems with the existing motivation, collect information for the questionnaire design and provide design basis. Interviews were conducted for the purpose of further understanding the status of employees' needs, understanding the objectives of corporate management, determining the direction of research, providing data for and improving questionnaires, also providing reference for the design of motivation mechanism. Formal research adopts the method of questionnaire survey. The questionnaire of staff motivation factors of CSADI Engineering & Technology Co., Ltd. is prepared according to the document theory and motivation factors survey, and scores are assigned to the options to obtain the survey data, see Appendix II. The questionnaire contained a total of 32 questions, involving salary and welfare, training, career planning, personal

development, work environment, team coordination, work achievements, and sense of belonging.

4.1.2 Data survey

A motivation factors questionnaire was used to research the existing motivation effects of CSADI Engineering & Technology Co., Ltd., understand the degree of motivation of the company's personnel and find out the problems with the motivation. This thesis adopts a random sampling method to allow as many personnel as possible to participate in the survey. The samples have the following characteristics: 1. Wide coverage. In order to ensure the coverage of sample survey, targeted selection of samples was conducted prior to the commencement of work, so that personnel from different positions and different project departments could participate in the questionnaire survey to increase the representativeness and breadth of the samples; 2. High personnel participation and reliability. Before the questionnaire survey, communication was made with the HR Department to obtain their support and cooperation, communication was also made with the respondents and described the purpose, method, significance of the research to the respondents, so as to increase the personnel participation and the sampling reliability.

The respondents of the questionnaire include personnel in technology, market and management positions. They come from the company's project management teams, project management department, administrative management positions, and market development department. The samples were collected from gender, age, education, professional title, length of service, working years in the company, title, position type. The sample background is shown in Table 4-1. A total of 117 questionnaires were distributed and 95 were recovered. The effective recovery rate was 81.2%.

Motivation Factors of the State-owned Enterprise Personnel in China

Table 4-1 Sample Background

	Background	Sample number	Proportion
Gender	M	63	66.32%
	F	32	33.68%
Age	Below 20	1	1.05%
	20-35	58	61.05%
	35-50	31	32.63%
	Above 50	5	5.26%
Education	Graduate and above	10	10.53%
	Undergraduate	41	43.16%
	Junior college and below	44	46.32%
Professional title	Senior	1	1.05%
	Middle	24	25.26%
	Junior	19	20%
	Without title	51	53.68%
Length of service	Within 1 year	12	12.63%
	1-10 years	45	47.37%

Motivation Factors of the State-owned Enterprise Personnel in China

	10-20 years	24	25.26%
	More than 20 years	14	14.74%
Working years in the company	Within 1 year	22	23.16%
	1-3 years	29	30.53%
	3-5 years	13	13.68%
	More than 5 years	31	32.63%
Title	Middle level and above	18	18.95%
	Supervisors	18	18.95%
	General employee	59	62.11%
Position type	Market	11	11.58%
	Technology	65	68.42%
	Management	19	20%

As can be seen from the statistics in the above table, the proportion of male employees in the company is 66.32%, the proportion of female employees is 33.68%, and the male employees are the majority. The proportion of employees under the age of 20 is 1.05%, the proportion of employees aged 20-35 is 61.05%, the proportion of employees aged 35-50 is 32.63%, and the proportion of employees over 50 is 5.26%. The company staff is mainly young employees and the staff structure is younger with vigor. The employees holding the Master degree or above account for 10.53%, the employees holding the Bachelor degree account for 43.16%, and the employees holding junior college diploma or below account for

46.32%. Most of the employees have good educational background and can meet the company's development needs. The employees with the senior professional title account for 1.05%, with the intermediate professional title account for 25.26%, with the junior professional title account for 20%, without any professional title account for 53.68%. The employees with professional titles account for less than half of total employees, which is related to the company's younger employee structure. The employees with 1-year or less work experience account for 12.63%, with 1-10 year work experience account for 47.37%, with 10-20 work experience account for 25.26%, and with the work experience of over 20 years account for 14.74%. Most of the employees of the company have short years of working. The employees having been employed by the company for 1 year or less account for 23.16%, for 1-3 years account for 30.53%, for 3-5 years account for 13.68%, for over 5 years account for 32.63%. Most employees have been employed by the company for a short time, so a favorable motivation mechanism is required to motivate them to serve the company for a long time. The middle-level and above employees account for 18.95%, the managers account for 18.95%, and the ordinary employees account for 62.11%. Most of the company's employees are grassroots ones. The marketing personnel account for 11.58%, technical personnel account for 68.42%, and the management personnel account for 20%. The company personnel are mainly technical staff.

It can be seen from the above statistical data that the characteristics of the samples of CSADI Engineering & Technology Co., Ltd. are as follows: mostly males, mostly aged 20-35, making the company relatively young, mostly with undergraduate and below academic qualifications, mostly with middle and below professional titles, mostly with the length of service of not more than 10 years, mostly having worked for 3 years in the company, mostly general employees, mostly in technology positions, fully embodying the staffing situation of an engineering technology-based company.

The author designed a survey outline for and an in-depth interview with personnel at different levels were conducted to understand the company's business objectives and existing

incentive operation, which provided correction and improvement direction for the questionnaire design. At the same time, it provides reference for the design of follow-up motivation mechanism.

20 personnel at different levels were chosen for the interview and their basic situation is shown in Table 4-2. There have been 12 male employees, 8 female employees, 5 employees above the middle-level positions, 5 middle-level employees, 5 managers, 5 ordinary employees, 6 marketing personnel, 9 technical personnel and 5 management personnel.

Table 4-2 Basic situation of interviewees

No.	Gender	Title	Type
1	M	Deputy General Manager	Management
2	M	Deputy General Manager	Technology
3	M	Deputy General Manager	Market
4	F	Labor Union Chairman	Management
5	M	Chief Engineer	Technology
6	M	Director	Management
7	M	Director	Market
8	F	Director	Technology
9	F	Deputy Director	Technology
10	M	Deputy Director	Market
11	M	Supervisor	Market

Motivation Factors of the State-owned Enterprise Personnel in China

12	M	Supervisor	Market
13	M	Supervisor	Technology
14	F	Supervisor	Technology
15	F	Supervisor	Management
16	F	General employee	Technology
17	M	General employee	Technology
18	M	General employee	Technology
19	F	General employee	Market
20	F	General employee	Management

This interview covers three questions:

Question 1: What do you think the company's long-term goals (more than one year) and short-term goals (within one year) are?

Question 2: Do you think the company's current motivation mechanism is sound and has good effect, if not, in what aspects?

Question 3: How do you think the company's motivation mechanism should be established to help realization of corporate goals?

4.2 Motivation survey results and analysis

4.2.1 Statistics of survey results

This motivation factors questionnaire was designed after the necessary refinement of motivation factors summarized by Chinese and foreign scholars on the basis of the analysis and

summarization of the relevant research on motivation theory and motivation factors and in combination with the actual situation of CSADI Engineering & Technology Co., Ltd.. The questionnaire has set a total of 10 motivation factors, i.e., salary and welfare, promotion, vacation reward, training, more challenging tasks to achieve self-worth, public praise, desirable company atmosphere, personal career planning, job matching and task force (see Appendix I: Motivation Factors Questionnaire).

This questionnaire classifies the respondents according to the category of their jobs and divides them into technical personnel, marketing personnel and management personnel. The data obtained from the survey are averaged and the statistical results are shown in Table 4-3.

Table 4-3 Statistics of Motivation Factors Questionnaire

Motivation factor Position	Technology personnel	Marketing personnel	Management personnel	Meaning of the work
Salary and welfare	3.0154	2.1818	4.0526	3.1263
Promotion	5.9538	6.0909	4.6316	5.7052
Vacation reward	4.0769	4.2727	4.9474	4.2736
Training	5.5538	5.1818	3.3684	5.0736
More challenging tasks to achieve self-worth	4.7692	4.9091	4.0526	4.6421
Public praise	5.8154	4.5455	5.7895	5.6632
Desirable company atmosphere	4.7538	4.2727	4.7895	4.7052
Personal career	5.3538	6.1818	5.8947	5.5579

planning				
Job matching	5.8615	7.2727	5.3158	5.9158
Task force	6.0154	7.9091	5.6316	6.1579
Meaning of the work	5.1169	5.2818	4.8474	5.0821

4.2.2 Analysis of motivation factors survey results

From Table 4-3, we can see that the average motivation level of the company's personnel for the current motivation factors is 5.0821, which is below the general level, and the overall motivation is below average. The average motivation value of personnel in different positions from high to low is marketing personnel, technical personnel and management personnel. From the perspective of motivation factors, the scores of salary and welfare, vacation reward, more challenging tasks to achieve self-worth and desirable company atmosphere scores are all below 5, with a poor motivation, and the scores of promotion, training, public praise, personal career planning, job matching, and task force are above the average, at 5-6 points, with general motivation. The motivation factors with the highest motivation are promotion, job matching, and task force, and those with the least motivation are salary and welfare, vacation reward, and more challenging tasks to achieve self-worth.

According to the motivation factors survey results of motivation factors, there are some deficiencies in the current motivation mechanism of CSADI Engineering & Technology Co., Ltd., and the degree of motivation is below average. The company's personnel hope to have better salary and welfare, more challenging tasks, better personal development prospects, more training and better corporate culture atmosphere, so as to achieve better self-actualization here.

4.3 Personnel interview results and analysis

An in-depth interview with twenty personnel at different levels was conducted and the

interview records are summarized as follows:

Question 1: What do you think the company's long-term goals (more than one year) and short-term goals (within one year) are?

The company's long-term goals are: (1) Development ideas: "One whole one basis and more wings", that is, the company takes EPC, PPP and general contracting as a whole, supervision as the basis and adopts the multi-wing development of installation, weak electricity, fire control and other special contracting and trade management; (2) Rely on the parent company's design, develop the company's core business, promote the company to better develop such main business as installation and intelligence, build brand effect, and make the company more competitive; (3) In terms of output value, gradually and orderly launch the general contracting business in order to achieve multiplication of output value, and the core business segment should maintain a higher profit.

The company's short-term goals are: (1) to better organize the general contracting business and other segments closely related to general contracting to form a complete structure, develop each segment, and promote project management integration; (2) in terms of output value, we should pursue steady growth rather than excessive growth in the short term and should not seek excessively high profit margins on the whole, should achieve a new contract value of RMB 200 million, and an output value of RMB 150 million; (3) improve the company's qualification level.

Question 2: Do you think the company's current motivation mechanism is sound and has good effect, if not, in what aspects?

The company's current motivation mechanism has yet to be improved, reflected in: (1) not normative enough motivation mechanism; (2) insufficient layered design, without hierarchical design of different motivation mechanisms based on different position types; (3) irrational design of motivation factors, deficiencies in design of factors that have a strong motivation for the company's personnel, such as salary and welfare, career development, work atmosphere, exchange and cooperation, and corporate culture; (4) the implementation of relevant motivation

is not timely enough to fully mobilize the personnel's enthusiasm.

Question 3: How do you think the company's motivation mechanism should be established to help realization of corporate goals?

(1) Pay attention to goal decomposition, rationally decompose and quantify corporate goals into the goals of various departments and individual organizations; (2) based on the needs of employees, focus on the design of an motivation mechanism model from the motivation factors such as salary and welfare, career development, work environment, work atmosphere, teamwork and corporate culture. (3) pay attention to the hierarchical and classified design of motivation mechanism; (4) establish external supporting measures of motivation mechanism to ensure the implementation of various motivation; (5) create an equal and fair corporate environment and make everyone have a goal.

According to the interview with the personnel, CSADI is still an engineering and technology-based enterprise at the initial stage of development. The company has clear enterprise development goals, and there are deficiencies in the existing motivation, which cannot effectively motivate the company's personnel. It is very necessary to build an effective motivation mechanism pursuant to the company's development. The establishment of motivation mechanism should be studied from the aspects of compensation and welfare, career development, work environment, work atmosphere, teamwork and corporate culture.

4.4 Problems with the company's motivation mechanism

Based on the preliminary research, as an enterprise at the early stage of development, the design of various systems is not yet reasonable and sound. The problems with the company's motivation mechanism are as follows:

(1) Poor design motivation mechanism

The poor design of motivation mechanism is mainly reflected in the following aspects:

First, the unreasonable setting of corporate goals, mainly manifested in: the goal setting is

too high, which leads to the frustration of the employees; the understanding of the goals is inaccurate, and errors occurs in the process of layered decomposition, leading to the inability to promote goal realization through effective motivation; confused primary and secondary goals, resulting in insufficient motivation effect; small dynamic change of goal setting, and poor adaptability to the environment, which is not conducive to the company's development; the goals are lacking in quantitative considerations, making the goals unable to be the effectively decomposed.

Second, the design of motivation mechanism is not systematic. The motivation factors in the motivation mechanism are too simple and excessive emphasis is put on material incentives, ignoring emotional factors; without considering the situations of an engineering and technology-based state-owned enterprise, standards are not clear enough, and no hierarchical design is provided; the assessment indicators are not scientific, assessment cycle is too monotonous, lacking in feedback mechanism for employee evaluation results; salary and welfare are not closely linked to individual performance, lacking in assessment and recognition of team and individual contribution rates, leading to serious egalitarianism in the team.

Third, little training for employees and lack of attention to their career development. Employees of an engineering and technology-based enterprise have a great demand for professional knowledge. If no sufficient training opportunities are guaranteed, the employees will be slow to improve their work ability because of insufficient professional knowledge and their personal development will be limited, thus it is difficult to realize their self-value. At the same time, due to the large differences in the company's personnel composition, attention should be paid to such differences, opinions from employees should be solicited, and related training should be organized in a targeted manner. The general content of the training system is not updated. Accordingly, the actual training results are lower than employees' expectations. No clear rules are prepared for the organization of training objects and all employees can participate in training and learning as long as time permits. In this manner, training is degraded to employees' obligations and burdens and cannot achieve the desired results.

(2) Poor adaptability of motivation mechanism to the company's development

As a state-owned enterprise at the early stage of development, the company has developed rapidly and the existing motivation cannot timely adapt to the development of the company, nor promptly motivate employees to create greater value for the company.

(3) Poor company atmosphere

The company's staff lacks of the idea and habit of motivation mechanism and has no clear and complete understanding of the effect of motivation factors for the employees of an engineering and technology-based stated enterprise, of the corporate development and of the enhancement of employee motivation. The lack of an enterprise atmosphere that emphasizes the effect of motivation mechanism and the lack of a supporting system of motivation system are not conducive to the effective operation of motivation mechanism.

4.5 Summary of this chapter

This chapter has designed the research on motivation factors. First of all, the research method of this thesis was introduced, which was divided into preliminary research and formal research. The preliminary research includes motivation survey and interview with personnel, the formal research is a questionnaire on motivation factors.

Through motivation survey and analysis of the results, the problems with the motivation mechanism of CSADI Engineering & Technology Co., Ltd. were found. It mainly includes the poor design motivation mechanism, the poor adaptability of motivation mechanism to the development of the company, and the poor company atmosphere.

Finally, on the basis of document theory research and motivation survey, the questionnaire on motivation factors was designed and improved and the research on the motivation factors of CSADI Engineering & Technology Co., Ltd. was conducted.

Chapter 5: Data Analysis of Questionnaire on Motivation Factors

Based on the previous questionnaire has been built a new one that will reflect the limitations of the company with the following factors: 1. promotion; 2. more challenging tasks to achieve self-worth; 3. personal development; 4. suitable position; 5. training; 6. company-guided career; 7. motivation with the company's motivation mechanism; 8. sense of belonging to the company; 9. opportunities of participating in company management; 10. public praise; 11. vacation reward; 12. high salary and welfare; 13. clear job responsibilities; 14. task force; 15. post setting; 16. personal career planning of employees; 17. desirable company atmosphere; 18. inter-departmental exchange and cooperation atmosphere. The official research sample is the same as the motivation questionnaire sample (See Table 4-1 for more details), including those who are engaged in technical positions, market positions, and management positions in the company, from various project manager departments, project management departments, administrative positions and market development departments respectively, with a total of 95 questionnaires obtained.

5.1 Statistical method of questionnaire

SPSS (Statistical Product and Service Solutions) software is a software product developed by IBM for statistical analysis and computation, data mining, predictive analysis and decision support, with such functions as preparation and coding of questionnaires, data input and collation, statistical reports, descriptive statistics, comparison of two population means, variance analysis, nonparametric test, correlation analysis, regression analysis, cluster analysis and discriminant analysis, factor analysis, reliability analysis, validity analysis and statistical map production. Because of its simple operation, SPSS software has played a huge

role in various fields of social sciences and natural sciences, and is widely used in economics, mathematics, statistics, logistics management, biology, psychology, geography, health care, sports, agriculture, forestry, commerce and other fields (Li, Yin, & Shi, 2008).

The statistical data of the questionnaire survey in this thesis was analyzed by SPSS22.0 statistical software, including reliability analysis, validity analysis, factor analysis and variance analysis.

The data obtained from the questionnaire survey was verified through reliability analysis and validity analysis to determine whether SPSS statistical software could be used for factor analysis.

The purpose of factor analysis is to conduct the principal component analysis of the data of motivation factors obtained from the questionnaire survey, and extract the main motivation factors for personnel.

Variance analysis is made for the personal background characteristics of the personnel of CSADI Engineering & Technology Co., Ltd. and the main motivation factors obtained from factor analysis, to determine the change rules of the feeling degree of motivation among the company's personnel with different personal background characteristics, so as to obtain the influence of different personal background characteristics of the personnel on the preference of motivation factors.

5.2 Reliability analysis

Reliability refers to the possibility of obtaining the same results when using the same indicator or measuring tool to repeatedly test the same thing. It reflects the authenticity of the measured object as well as the consistency or stability of the measurement result. At present, the Cronbach α value proposed by Cuieford is commonly used as the reliability criterion in empirical research. The larger the Cronbach α value, the greater the correlation of each sub-item factors, i.e., the higher its internal consistency. Among them, the questionnaire data with a Cronbach α value of above 0.7 is highly reliable, that of 0.35-0.7 is moderately reliable,

and that below 0.35 has a low reliability.

The reliability of the questionnaire survey was judged by the Cronbach α value. SPSS22.0 statistical software was used to carry out the reliability analysis of the questionnaire data on motivation factors for the personnel of CSADI Engineering & Technology Co., Ltd. and the Cronbach α coefficient obtained was 0.75. See Table 5-1 for details. It shows that the questionnaire survey has high reliability and the results are reliable.

Table 5-1 Cronbach α Coefficient of Questionnaire on Motivation Factors

Cronbach's Alpha	Number of items
0.75	53

5.3 Validity analysis

The validity reflects the correctness of the measured features that can be measured by a measuring tool, and the validity analysis is mainly judged by KMO and Bartlett's test. KMO is used to compare simple correlation and partial correlation coefficients between variables. If KMO is bigger than 0.9, factor analysis is quite suitable; if 0.8-0.9, factor analysis is very suitable; if 0.7-0.8, factor analysis is suitable; if 0.6-0.7, factor analysis can still be done; if 0.5-0.6, it is poor; if below 0.5, factor analysis should be abandoned.

The results of KMO and Bartlett's test of sphericity of the questionnaire on motivation factors for the personnel of CSADI Engineering & Technology Co., Ltd. are shown in Table 5-2. The KMO value is 0.647, the acceptable chi-square value is 880.325, the degree of freedom is 231, and the significance probability is 0.000, less than 0.01, indicating that the survey data is correlated and factor analysis can be done.

Table 5-2 Results of KMO and Bartlett's Test of Sphericity of the Questionnaire on Motivation Factors

	KMO test	0.647
	Acceptable chi-square value	880.325
Bartlett's test of sphericity	Degree of freedom	231
	Significance	0.000

5.4 Factor analysis

Factor analysis is to conduct analysis of the data of 95 questionnaires obtained in the survey using SPSS22.0 statistical software through the method of principal component extraction. See Appendix V for variable assignment. Factor extraction is done using varimax orthogonal rotation and five new factors are obtained.

Their eigenvalues are all greater than 1, where the eigenvalue of career development factor is 4.027, the eigenvalue of sense of belonging factor is 2.974, the eigenvalue of salary and welfare factor is 2.045, the eigenvalue of job matching factor is 1.293, the eigenvalue of departmental coordination factor is 1.179. The variance interpretation rate is 63.983%, where the variance contribution ratio of career development factor is 22.371, the variance contribution ratio of sense of belonging factor is 16.520, the variance contribution ratio of salary and welfare factor is 11.361, the variance contribution ratio of job matching factor is 7.181, the variance contribution ratio of departmental coordination factor is 6.549.

That is, five factors generally explain 63.983% variation in the questionnaire data, as shown in Table 5-3.

Table 5-3 Variance Decomposition and Interpretation Rate

Orthogonal rotation with the maximum variance gives the rotated factor loading matrix, as

Factor	Initial eigenvalue			Square sum of the load of factors extracted before rotation			Square sum of the load of factors extracted after rotation		
	All Eigenvalues	Variance contribution ratio %	Cumulative contribution ratio %	All eigenvalues	Variance contribution ratio %	Cumulative contribution ratio %	All eigenvalues	Variance contribution ratio %	Cumulative contribution ratio %
Career development	4.027	22.371	22.371	4.027	22.371	22.371	3.620	20.113	20.113
Sense of belonging	2.974	16.520	38.891	2.974	16.520	38.891	2.774	15.413	35.526
Salary and welfare	2.045	11.361	50.252	2.045	11.361	50.252	2.367	13.151	48.677
Job matching	1.293	7.181	57.434	1.293	7.181	57.434	1.384	7.691	56.368
Depart- mental coordi- nation	1.179	6.549	63.983	1.179	6.549	63.983	1.371	7.615	63.983

shown in Table 5-4.

The below table shows that through the factor analysis of the motivation factors for the personnel of CSADI Engineering & Technology Co., Ltd., the newly extracted factors represent different common factors. These common factors are composed of some similar factors and form new factors.

Factor 1: It includes: promotion, more challenging tasks to achieve self-worth, personal development, suitable position, training, and company-guided career which represent the factors related to the personal career growth and development and it is defined as a “career development” factor. The variance contribution rate of factor 1 is 20.113%. Thus it can be seen that 20.113% of the motivation effect of the personnel of CSADI Engineering & Technology Co., Ltd. is dominated by career development factor.

Through the analysis of the questionnaire survey, we can see that the factor includes: promotion, More challenging tasks to achieve self-worth, personal development, suitable position, training, and company-guided career.

Factor 2: It is determined by a sense of identity and motivation to the company and defined as a “sense of belonging”. The variance contribution rate of factor 2 is 15.413%. Thus it can be seen that 15.413% of the motivation effect of the personnel of CSADI Engineering & Technology Co., Ltd. is dominated by sense of belonging factor.

Through the analysis of the questionnaire survey, we can see that the factor includes: motivation with the company's motivation mechanism, sense of belonging to the company, and opportunities of participating in company management.

Factor 3: It is dominated by public praise, vacation reward, and high salary and welfare and defined as a “salary and welfare”. The variance contribution rate of factor 3 is 13.151%. Thus it can be seen that 13.151% of the motivation effect of the personnel of CSADI Engineering & Technology Co., Ltd. is dominated by salary and welfare factor.

Through the analysis of the questionnaire survey, we can see that the factor includes: public praise, vacation reward, and high salary and welfare.

Factor 4: It is determined by clear job responsibilities, clear-cut work task, post setting and employees' career planning and defined as a "job matching". The variance contribution rate of factor 4 is 7.691%. Thus it can be seen that 7.691% of the motivation effect of the personnel of CSADI Engineering & Technology Co., Ltd. is dominated by job matching factor.

Through the analysis of the questionnaire survey, we can see that the factor includes: clear job responsibilities, task force, post setting, personal career planning of employees.

Factor 5: It consists of inter-departmental work exchange and work atmosphere, and is defined as a "departmental coordination" factor. The variance contribution rate of factor 5 is 7.615%. Thus it can be seen that 7.615% of the motivation effect of the personnel of CSADI Engineering & Technology Co., Ltd. is dominated by departmental coordination factor.

Through the analysis of the questionnaire survey, we can see that the factor includes: desirable company atmosphere, inter-departmental exchange and cooperation atmosphere.

Table 5-4 Rotated Factor Loading Matrix

Motivation factor	Factor				
	1	2	3	4	5
Promotion	0.700				
More challenging tasks to achieve self-worth	0.575			0.376	
Personal development	0.696				
Suitable position	0.548		0.493		
Training	0.679				
Company-guided career	0.708				

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Motivation with the company's motivation mechanism	0.781	0.353	
Sense of belonging to the company	0.760		
Opportunities of participating in company management	0.492		
Public praise		0.687	
Vacation reward		0.490	
High salary and welfare		0.760	
Clear job responsibilities			0.658
Task force			0.873
Post setting			0.684
Personal career planning of employees	0.485	0.605	
Desirable company atmosphere		0.455	0.556
Inter-departmental exchange and cooperation atmosphere		0.385	0.635

Note: 1. Extraction method: analysis of the main components; 2. Rotation method: maximum variation method with Kaiser normalization.

5.5 Variance analysis

Through the variance analysis of such variables as gender, age, education, professional title, position type, length of service, salary level, and employment time of the personnel of CSADI Engineering & Technology Co., Ltd. and the new motivation factors obtained from factor analysis, the change rules of the degree of feeling of motivation with different personal background characteristics are determined, so as to obtain the influence of different personal background characteristics of the company's personnel on the preference of motivation factors. Motivation factors are: career development, sense of belonging, salary and welfare, job matching, and departmental coordination.

5.5.1 Variance analysis of different genders and motivation factors

Table 5-5 Variance Analysis of Genders and Motivation Factors

Motivation factor	Variable	Mean of the work	Standard deviation	F value	Significance
Career development	M	4.37	3.086	0.337	0.563
	F	4.00	2.476		
Sense of belonging	M	2.30	1.173	1.091	0.299
	F	2.56	1.105		
Salary and welfare	M	4.14	2.890	0.220	0.640
	F	3.84	3.028		
Job matching	M	1.76	0.588	3.158	0.079
	F	2.00	0.672		

Departmental	M	1.73	0.919		
coordination	F	2.09	1.088	2.927	0.090

The variance analysis of different genders and motivation factors is shown in Table 5-5. Among the respondents, males account for 66.32%, indicating that males are the main part of the personnel of CSADI Engineering & Technology Co., Ltd..

The analysis results show that there is no significant difference in the degree of feeling of motivation factors among personnel of different genders (significance > 0.05). Through the comparison of means, both male and female personnel prefer the factors of career development and salary and welfare.

5.5.2 Variance analysis of different ages and motivation factors

Table 5-6 Variance Analysis of Ages and Motivation Factors

Motivation factor	Variable	Mean of the work	Standard deviation	F value	Significance
Career development	Aged below 20	2.00	—	0.877	0.456
	Aged 20-35	3.97	2.753		
	Aged 35-50	4.87	2.975		
	Aged above 50	4.00	4.000		
Sense of belonging	Aged below 20	2.00	—	1.162	0.329

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	Aged 20-35	2.52	1.232		
	Aged 35-50	2.10	0.908		
	Aged above 50	2.80	1.483		
	Aged below 20	8.00	—		
	Aged 20-35	5.57	3.315		
Salary and welfare	Aged 35-50	4.26	2.875	1.918	0.132
	Aged above 50	3.40	2.881		
	Aged below 20	2.00	—		
	Aged 20-35	1.50	0.570		
Job matching	Aged 35-50	1.42	0.564	3.026	0.034*
	Aged above 50	2.20	0.44 7		
	Aged below 20	1.00	—		
Departmental coordination	Aged 20-35	1.95	1.050	2.248	0.088
	Aged 35-50	1.58	0.720		

Aged above 50	2.60	1.342
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The variance analysis of different ages and motivation factors is shown in Table 5-6. Among the respondents, the proportion of personnel aged 20-35 is 61.05%, indicating that young people are the main part of the personnel of CSADI Engineering & Technology Co., Ltd..

The analysis results show that there is significant difference in the degree of feeling of Post matching among personnel of different ages (significance<0.05). Through the comparison of means, the personnel aged 20-35, 35-50 and above 50 all prefer career development and salary and welfare and those aged above 50 have a preference for departmental coordination.

5.5.3 Variance analysis of different academic qualifications and motivation factors

Table 5-7 Variance Analysis of Academic Qualifications and Motivation Factors

Motivation factor	Variable	Mean of the work	Standard deviation	F value	Significance
Career development	Graduate and above	1.70	0.483	0.138	0.871
	Undergraduate	1.63	0.488		
	Junior college and below	1.68	0.471		
Sense of belonging	Graduate and above	2.80	1.398	1.605	0.206
	Undergraduate	2.51	1.227		

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	Junior college and below	2.18	0.995		
	Graduate and above	5.90	3.178		
Salary and welfare	Undergraduate	5.56	3.123	1.850	0.163
	Junior college and below	4.39	3.222		
	Graduate and above	1.70	0.483		
Job matching	Undergraduate	1.85	0.691	0.288	0.751
	Junior college and below	1.86	0.594		
	Graduate and above	1.80	0.789		
Departmental coordination	Undergraduate	1.95	1.244	0.357	0.701
	Junior college and below	1.77	0.743		

The variance analysis of different academic qualifications and motivation factors is shown in Table 5-7. Among the respondents, the personnel with undergraduate qualifications account for 43.16%, and those with junior college and below qualifications 46.32%, indicating that the personnel with undergraduate and below qualifications are the main part of the personnel of

CSADI Engineering & Technology Co., Ltd..

The analysis results show that there is no significant difference in the degree of feeling of motivation factors among personnel with different academic qualifications (significance>0.05). Through the comparison of means, the personnel with postgraduate and above qualifications prefer the factors of career development, sense of belonging, salary and welfare, those with undergraduate qualifications prefer the factors of sense of belonging, salary and welfare, Post matching and departmental coordination, and those with junior college and below qualifications prefer the factors of career development and departmental coordination.

5.5.4 Variance analysis of different professional titles and motivation factors

Table 5-8 Variance Analysis of Professional Titles and Motivation Factors

Motivation factor	Variable	Mean of the work	Standard deviation	F value	Significance
Career development	Senior title	5.00	—	0.058	0.981
	Middle title	4.67	2.378		
	Junior title	5.00	2.946		
	No title	4.67	2.887		
Sense of belonging	Senior title	3.00	—	0.302	0.824
	Middle title	2.54	1.103		
	Junior title	2.37	1.342		
	No title	2.31	1.122		
Salary and welfare	Senior title	4.00	—	2.931	0.038*

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	Middle title	2.58	2.041		
	Junior title	4.32	3.652		
	No title	2.33	2.269		
	Senior title	1.00	—		
Job matching	Middle title	1.88	0.612	1.659	0.181
	Junior title	1.63	0.597		
	No title	1.92	0.627		
	Senior title	4.00	—		
Departmental coordination	Middle title	1.63	1.013	2.123	0.103
	Junior title	1.89	1.049		
	No title	1.90	0.922		
	Senior title	4.00	—		

The variance analysis of different professional titles and motivation factors is shown in Table 5-8. Among the respondents, the personnel without titles account for 53.68% and they are the main part of the company's personnel, and those with middle titles account for 25.26% and they are the main part of personnel with titles.

The analysis results show that there is significant difference in the degree of feeling of the factor of salary and welfare among personnel with different professional titles (significance<0.05). Through the comparison of means, the personnel with senior titles prefer the factors of career development, salary and welfare and departmental coordination, those with middle titles prefer the factors of career development and Post matching , those with junior titles prefer the factors of career development and salary and welfare, and those without titles

prefer career development and Post matching .

5.5.5 Variance analysis of different positions and motivation factors

Table 5-9 Variance Analysis of Position Types and Motivation Factors

Motivation factor	Variable	Mean of the work	Standard deviation	F value	Significance
Career development	Technology	4.75	2.937	4.117	0.019*
	Market	3.91	2.468		
	Management	2.68	2.428		
Sense of belonging	Technology	3.63	1.084	3.588	0.032*
	Market	3.36	1.120		
	Management	2.84	1.302		
Salary and welfare	Technology	2.89	2.569	1.357	0.263
	Market	3.21	2.157		
	Management	1.64	3.011		
Job matching	Technology	1.75	0.587	2.132	0.124
	Market	2.00	0.632		
	Management	2.05	0.705		
Departmental	Technology	1.77	0.915	0.738	0.481

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coordination	Market	2.00	1.342
	Management	2.05	1.026

The variance analysis of different position types and motivation factors is shown in Table 5-9. Among the respondents, the personnel in technology positions account for 43.16%, and they are the main part of the personnel of CSADI Engineering & Technology Co., Ltd..

The analysis results show that there is significant difference in the degree of feeling of the factors of career development and sense of belong among personnel in different positions types (significance<0.05). Through the comparison of means, the personnel in technology positions prefer the factors of career development, sense of belonging and salary and welfare, those in market positions prefer the factors of career development, salary and welfare and departmental coordination, and those in management positions prefer the factors of career development, Post matching and departmental coordination.

5.5.6 Variance analysis of different lengths of service and motivation factors

Table 5-10 Variance Analysis of Length of Service and Motivation Factors

Motivation factor	Variable	Mean of the work	Standard deviation	F value	Significance
Career development	Less than 1 year	3.92	2.746	3.116	0.030*
	1-10 years	4.58	2.641		
	10-20 years	2.50	2.735		
	More than 20 years	4.29	2.998		

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	Less than 1 year	1.92	0.793		
Sense of belonging	1-10 years	2.51	1.272	0.846	0.472
	10-20 years	2.42	1.176		
	More than 20 years	2.36	0.929		
	Less than 1 year	4.75	3.251		
Salary and welfare	1-10 years	5.82	3.150	1.852	0.143
	10-20 years	4.04	3.342		
	More than 20 years	4.57	2.766		
	Less than 1 year	1.67	0.492		
Job matching	1-10 years	1.78	0.636	1.308	0.277
	10-20 years	2.04	0.624		
	More than 20 years	1.86	0.663		
Departmental coordination	Less than 1 year	1.67	0.651	0.382	0.766

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1-10 years	1.96	1.065
10-20 years	1.75	0.989
More than 20 years	1.86	1.027

The variance analysis of different lengths of service and motivation factors is shown in Table 5-10. Among the respondents, the personnel with the length of service of 1-10 years account for 47.37%, and they are the main part of the personnel of CSADI Engineering & Technology Co., Ltd..

The analysis results show that there is significant difference in the degree of feeling of the career development factor among personnel with different lengths of service (significance<0.05). Through the comparison of means, the personnel with the length of service of less than 1 year prefer the factors of career development and salary and welfare, those with the length of service of 1-10 years prefer the factors of career development, sense of belonging, salary and welfare and departmental coordination, those with the length of service of 10-20 years prefer the factors of sense of belonging and Post matching and those with the length of service of more than 20 years prefer the factors of career development, Post matching and departmental coordination.

5.5.7 Variance analysis of different compensations and motivation factors

Table 5-11 Variance Analysis of Compensation Level and Motivation Factors

Motivation factor	Variable	Mean of the work	Standard deviation	F value	Significance
Career development	Less than RMB 30,000	3.21	2.217	3.003	0.035*
	RMB 30,000-60,000	3.81	2.552		

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	RMB 60,000-100,000	6.00	2.500		
	More than 100,000	3.33	2.658		
	Less than RMB 30,000	4.32	1.020		
	RMB 30,000-60,000	3.29	0.997		
Sense of belonging	RMB 60,000-100,000 0	2.44	0.527	14.699	0.000**
	More than 100,000	2.17	0.983		
	Less than RMB 30,000	3.75	2.824		
	RMB 30,000-60,000	4.00	2.758		
Salary and welfare	RMB 60,000-100,000 0	3.44	3.283	1.885	0.138
	More than 100,000	6.67	3.670		
	Less than RMB 30,000	1.96	0.744		
Job matching	RMB 30,000-60,000	1.87	0.561	2.010	0.118
	RMB 60,000-100,000 0	1.67	0.500		

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	More than 100,000	1.33	0.211		
	Less than RMB 30,000	2.21	1.067		
Departmental coordination	RMB 30,000-60,000	1.81	0.971		
				2.927	0.038*
	RMB 60,000-100,000	1.44	0.726		
	More than 100,000	1.17	0.408		

The variance analysis of different compensations and motivation factors is shown in Table 5-11. Among the respondents, the personnel with the compensation of RMB 30,000-60,000 account for 54.74%, indicating a low income level, and that they are the main part of the personnel of CSADI Engineering & Technology Co., Ltd..

The analysis results show that there is significant difference in the degree of feeling of the factors of career development and sense of belonging among personnel with different compensations (significance<0.05). Through the comparison of means, the personnel with the compensation of less than RMB 30,000 prefer the factors of sense of belonging, Post matching and departmental coordination, those with the compensation of RMB 30,000-60,000 prefer the factors of salary and welfare, Post matching and departmental coordination, those with the compensation of RMB 60,000-100,000 prefer the career development factor, and those with the compensation of more than RMB 100,000 prefer the compensation and benefit factor.

5.5.8 Variance analysis of different employment time and motivation factors

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Table 5-12 Variance Analysis of Employment Time and Motivation Factors

Motivation factor	Variable	Mean of the work	Standard deviation	F value	Significance
Career development	Less than 1 year	1.55	0.510	0.699	0.555
	1-3 years	1.69	0.471		
	3-5 years	1.77	0.439		
	More than 5 years	1.68	0.475		
Sense of belonging	Less than 1 year	2.86	1.037	2.705	0.050*
	1-3 years	2.93	0.961		
	3-5 years	3.62	1.044		
	More than 5 years	3.39	0.919		
Salary and welfare	Less than 1 year	2.23	1.744	1.043	0.377
	1-3 years	3.48	3.124		
	3-5 years	2.62	2.501		
	More than 5 years	2.68	2.688		
Job matching	Less than 1 year	1.64	0.492	1.115	0.347
	1-3 years	1.86	0.743		
	3-5 years	1.92	0.641		
	More than 5 years	1.94	0.574		

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		years			
Departmental coordination	Less than 1 year	1.82	0.958		
	1-3 years	1.86	1.026	1.262	0.292
	3-5 years	2.31	1.109		
	More than 5 years	1.68	0.909		

The variance analysis of employment time and motivation factors is shown in Table 5-12. Among the respondents, the personnel with the employment time of more than 5 years account for 32.63%, and they are the main part of the personnel of CSADI Engineering & Technology Co., Ltd..

The analysis results show that there is significant difference in the degree of feeling of the factor of sense of belonging among personnel with different employment time (significance<0.05). Through the comparison of means, the personnel with the employment time of 1-3 years prefer the factor of salary and welfare, those with the employment time of 3-5 years prefer the factors of career employment, sense of belonging and departmental coordination, those with the employment time of more than 5 years prefer the factors of sense of belonging, salary and welfare and Post matching .

5.6 Summary of this chapter

Through factor analysis and variance analysis, it is known that:

1. CSADI’s employees pay more attention to career development (20.113%), sense of belonging to the company (15.413%), followed by salary and welfare (13.151%). They also have a certain demand for Post matching (7.691%) and departmental coordination (7.615%).

Comparing the domestic and foreign research results on motivation factors (Table 5-13). Tampoe (1989) conducted a questionnaire survey on the intellectual employees of R & D

institutions, design companies and engineering companies, and obtained the four most important motivation factors for intellectual employees: individual growth (33.74%) and work autonomy (30.51%), business achievement (28.69%) and money wealth (7.07%). Based on a questionnaire survey of R & D personnel in seven high-tech enterprises engaged in software, communications, etc., Yang (2004) found out that the top five motivation factors were: personal growth and development, remuneration, challenging and fulfilling jobs, equity, and welfare and stability. Based on a questionnaire survey of 426 intellectual employees in state-owned enterprises, Zheng (2001) found out that the motivational factors of intellectual employees in state-owned enterprises were ranked as follows: money wealth (48.12%), personal development (23.71%), business achievement (22.30%) and work autonomy (5.87%); Zhang and Peng (2001) conducted a questionnaire survey on R & D personnel, sales staff and customer service personnel of Shenzhen Huawei Technology Co., Ltd. and other enterprises, and concluded that incentive factors were ranked in terms of importance as follows: salary and reward (31.9%), personal growth and work (23.9%), challenging jobs (10.1%), company prospects (8.0%), job security and stability (6.5%). Wang (2007) conducted an interview and questionnaire survey to 290 knowledge-based employees in IT enterprises in Beijing, and found out through due analysis the top five motivation factors which have a predominant effect on knowledge-based employees: salary and benefits (28%), training and learning (20.5%), ability display (12.7%), promotion (11.2%), and company prospect (7.6%). Xiong and Qu (2012) empirically studied the motivation factors of knowledge workers, and concluded that their motivation factors were growth factors, work factors, leadership factors, mental factors, management factors, economic factors and environmental factors. Su and Li (2015), through empirical research, held that the most important motivation for the knowledge workers entering the stage were development space, exertion of competence, corporate prospects, teamwork, salary and bonuses.

We can see that there are significant differences in the motivation mechanism factors for CSADI's employees, and those with prominent differences are sense of belonging and

departmental coordination. Therefore, the motivation for CSADI's employees should not rely solely on compensation motivation, instead, the investment in and motivation for career planning and development should be increased all the more, and at the same time, attention should be paid to a richer corporate culture and the enhancement of the sense of pride, sense of dependence and sense of belonging of the employees to the company to meet the needs of the employees in all aspects.

Table 5-13 Comparison of Research Results on Motivation Factors

Scholar	Motivation factor 1	Motivation factor 2	Motivation factor 3	Motivation factor 4	Motivation factor 5
Tampoe	Personal growth	Job autonomy	Business achievement	Money and wealth	
Yang	Personal growth and development	Compensation	Challenging and fulfilling job	Corporate development	Teamwork
Zheng	Money and wealth	Personal development	Business achievement	Job autonomy	
Zhang and Peng	Wages and rewards	Personal growth and development	Challenging job	The company's prospect	Job security and stability
Wang	salary and benefits	training and learning	ability display	promotion	company prospect
Xiong and	growth factors	work	leadership	mental	management

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Qu		factors	factors	factors	factors
Su and Li	development space	exertion of competence	corporate prospects	teamwork	salary and bounses
This thesis	Career development	Sense of belonging	Salary and welfare	Job matching	Departmental coordination

2. Male staff account for 66.32% and they are the main part of the company's employees. Through variance analysis, both male and female employees prefer career development, followed by salary and welfare. Based on the situation that the percentage of male employees is much greater than that of female employees, CSADI Engineering & Technology Co., Ltd. should appropriately increase the motivation investment in male employees' salary and welfare, and enhance the salary and welfare in the positions preferred by them such as technology and market positions under the motivation mode of overall career planning and realization of career goals of the employees.

3. The 20-35 age group accounts for 61.05% of the total, thus, young people are the main part of the company's employees. Through variance analysis, those aged 20-35 prefer salary and welfare, and their mean value for salary and welfare is 5.57. The employees in this age group are in the initial period of their career struggles and families, and shoulder a heavy economic burden on the whole. Therefore, they attach more importance to the wage level. According to the actual situation of the company, the composition model of fixed wage+ floating wage is more suitable for CSADI. Through the spiritual guidance for the staff, the company should encourage more pay for more work to mobilize the overall work enthusiasm of employees, increase work intensity, improve employee satisfaction and at the same time, achieve company goals.

4. Employees with the length of service of 1-10 years account for 47.37%, and they are the main part of CSADI's employees. Through variance analysis, the employees with the length of

service of 1-10 years prefer career development, with the mean of 4.58. The employees with such length of service are just in the period of career development and they have requirements and considerations for career development and planning. Therefore, CSADI Engineering & Technology Co., Ltd. should strengthen the cultivation and management for employees with a short employment time or short length of service, and plan for their work based on the company goals.

5. Employees with undergraduate qualifications account for 43.16%, and those with junior college and below qualifications account for 46.32%. They are an important part of the company's employees. Employees with undergraduate and below qualifications have a preference for salary and welfare. Among them, the mean preference value for salary and welfare of employees with postgraduate and above qualifications is 5.90, that of employees with undergraduate qualifications 5.56 and that of employees with junior college and below qualifications 4.39. It can be seen that the higher the education level, the greater the degree of recognition for compensation, and the determination of post wage in combination with academic qualifications is also the compensation system that the company needs to implement.

6. Employees in technology positions account for 68.42% and they are the main part of the company's employees. The personnel in technology positions prefer personal career development and sense of belonging, with the mean preference values of 4.75 and 3.63 respectively. In an engineering and technology-based company, the technical personnel usually spend much time in the project department, and do not keep a close contact with the company, but they also expect a sense of belonging and personal development in this area.

7. Employees with middle professional titles account for 25.26% and they are the main part of the company's personnel with titles. The employees with different professional titles have a significant preference for salary and welfare (significance <0.05). Among them, those with junior professional titles have the highest preference for salary and welfare, with the mean value of 4.32. The mean preference value for compensation of employees with senior professional titles is 4.00. In the design of motivation mechanism, compensation should be

taken into full account to meet the material needs of employees.

8. Employees having worked for more than 5 years in the company account for 32.63% and they are the main part of the company's employees. They have a very significant preference for sense of belonging to the company. Among them, those having worked for 3-5 years in the company have the highest preference for sense of belonging to the company, with the mean preference value of 3.48. The employees in this stage have just developed steadily in the company and pursue further development and have a strong sense of belonging to the company.

Therefore, according to the needs of employees with different background characteristics, and their degree of awareness and preference of motivation factors, appropriate and targeted motivation should be provided to different employees, to stimulate their enthusiasm for accomplishing goals, and to increase job motivation, so as to better achieve company goals.

Chapter 6: Design and Test of the Motivation Model

According to the research results of the motivation factors mentioned above, the motivation mechanism model based on the five major motivation factors of career development, sense of belonging, salary and welfare, job matching and departmental coordination was designed. Through the mean value analysis and variance analysis of the motivation survey, the validity of the model and the preference of people at different positions for the motivation factors were tested. Through the analysis of personnel performance before and after the motivation model was run, the sensitivity of people at different positions to the motivation factors was obtained. Finally, based on the motivation survey and performance analysis, the motivation mechanism model was designed and improved.

6.1 Proposal of the motivation model

By reference to research results both at home and abroad, and through the personnel motivation survey at CSADI Engineering & Technology Co., Ltd. as well as the company manager interview investigation and company staff motivation factor research, the motivation model framework of CSADI Engineering & Technology Co., Ltd. has been designed, as shown in Figure 6-1.

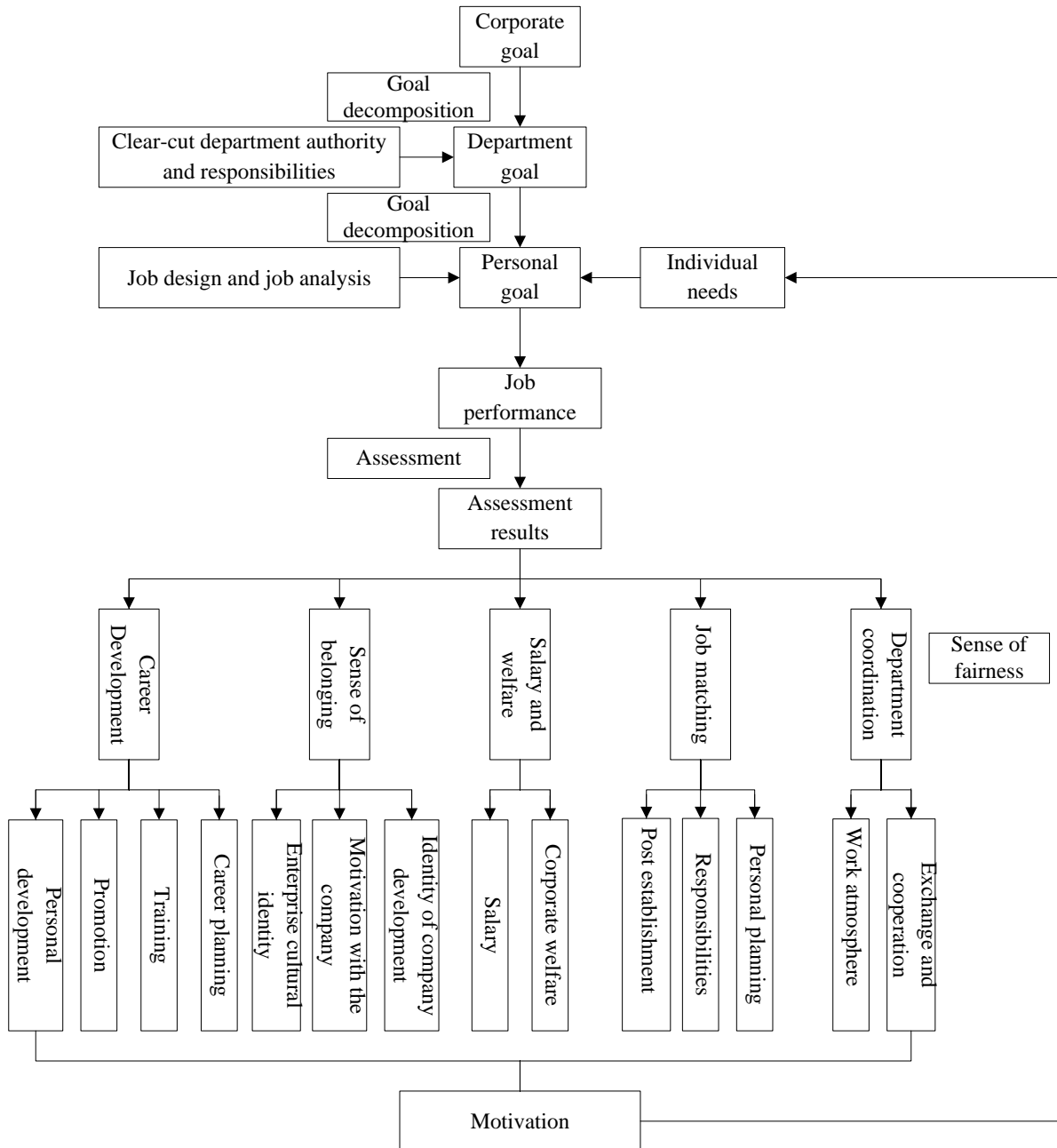


Figure 6-1 Motivation model framework of CSADI Engineering & Technology Co., Ltd.

In the Chapter 5 of the research on the motivation factors, through factor analysis and principal component extraction, such five major motivations as career development (20.113%), sense of belonging (15.413%), salary and welfare (13.151%), job matching (7.691%) and departmental coordination (7.615%) have been obtained. Career development includes promotion, more challenging tasks to achieve self-worth, personal development, suitable position, training, and company-guided career. The sense of belonging includes sense of belonging to the company, motivation with the company's motivation mechanism, and the

opportunities of participating in company management. Salary and welfare include public praise, vacation reward, high salary and welfare. Job matching includes clear job responsibilities, task force, post setting, personal career planning of employees. Departmental coordination includes desirable company atmosphere, inter-departmental exchange and cooperation atmosphere. Based on the results of this research, this chapter designs the initial motivation mechanism model of CSADI Engineering & Technology Co., Ltd., and explores the establishment of a motivation mechanism which meets the actual needs of the company.

By working out the strategic development planning, reasonably planning the enterprise management goal, and defining the clear-cut department authority and responsibilities, the corporate goal is decomposed into various department goals. Through job analysis and job design of each job, the corporate goal is gradually broken down into individual work objectives of departments, and combined with individual needs and the corporate appraisal system to assess the completion of individual goals. Individual needs are reflected through the assessment results, so as to further realize personal goals through hard work to meet the individual needs, and then to achieve the corporate goal.

Motivation include career development, sense of belonging, salary and welfare, job matching and department cooperation. Career development serves to meet the development needs of employees through the future development planning of employees, including personal development, promotion, training and career planning. The sense of belonging motivate the spiritual needs of employees through the establishment of corporate culture, including corporate cultural identity, motivation with the company and identity of corporate development. Salary and welfare are designed to meet the material needs for employees' living through material motivation, including salary and corporate welfare. Job matching enables people to fulfill their duties through appropriate post establishment, so as to satisfy employees' sense of work achievement and improve their work enthusiasm, including post establishment, post responsibilities and self-planning. Departments coordination aims to meet the demands of employees' working environment by creating a good corporate atmosphere, including a

desirable work atmosphere and inter-departmental communication and cooperation.

6.2 The motivation mechanism

After a year of operation of the motivation model in the company, and through the re-distribution of original motivation questionnaires, the current company personnel motivation was investigated. The questionnaire sample is the same as the motivation questionnaire sample one year ago (See Table 4-1 for details), including those who are engaged in technical, market and management positions in the company. 95 questionnaires were obtained. The statistical results are as shown in Table 6-1.

Table 6-1 Motivation Questionnaire Statistical Table

Post Motivation factor	Technical personnel	Marketing personnel	Management personnel	Mean of the work
Salary and welfare	5.7143	4.0377	5.3571	5.0364
Promotion	6.7143	5.6981	6.7857	6.3994
Vacation reward	8.5714	6.5283	6.2143	7.1047
Training	7.7143	6.8302	6.2857	6.9434
More challenging tasks to achieve self-worth	8.1429	6.1887	6.7143	7.0153
Public praise	8.4286	7.0000	7.0714	7.5000
Desirable company atmosphere	4.7143	4.6415	5.2143	4.8567
Personal career planning	7.2857	6.2830	4.8571	6.1420

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Job matching	5.2857	5.4340	6.0714	5.5970
Task force	5.0000	6.1321	6.2857	5.8059
Mean of the work	6.7572	5.8774	6.0857	6.2401

Through comparison of the results in Table 4-3, it is found that after the establishment of the motivation model, personnel motivation has been greatly improved. The mean motivation has been increased from 5.0821 to 6.2401. Therein, the mean motivation of technician personnel has been increased from 5.1169 to 6.7572, the mean motivation of marketing personnel increased from 5.2818 to 5.8774, and the mean motivation of management personnel increased from 4.8474 to 6.0857, so the motivation of technician personnel has been improved to the greatest extent.

From the perspective of motivation factors, the mean motivation of salary and welfare has been increased from 3.1263 to 5.0364, the mean motivation of promotion has been increased from 5.7052 to 6.3994, the mean motivation of vacation reward has been increased from 4.2736 to 7.1047, the mean motivation of training has been increased from 5.0736 to 6.9434, the mean motivation of more challenging tasks to achieve self-worth has been increased from 4.6421 to 7.0153, the mean motivation of public praise has been increased from 5.6632 to 7.5000, the mean motivation of desirable company atmosphere has been increased from 4.7052 to 4.8567, the mean motivation of personal career planning has been increased from 5.5579 to 6.1420, the mean motivation of job matching has been increased from 5.9158 to 5.5970, the mean motivation of task force has been increased from 6.1579 to 5.8059.

By analyzing the questionnaire data of motivation before and after the operation of the motivation model, we can see that the motivation model applied and established in the company is very effective.

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Table 6-2 Variance Analysis of Motivation Survey

Post Motivation factor	Management personnel		
	Technical personnel	Marketing personnel	
Salary and welfare	0.0333*	0.0125*	0.2219
Promotion	0.0456*	0.0195*	0.0406*
Vacation reward	0.1945	0.7190	0.7707
Training	0.0548	0.0444*	0.0887
More challenging tasks to achieve self-worth	0.1256	0.8891	0.0377*
Public praise	0.4841	0.6074	0.6298
Desirable company atmosphere	0.0480*	0.0438*	0.0347*
Personal career planning	0.0493*	0.0251*	0.2837
Job matching	0.1527	0.3731	0.2570
Task force	0.0560	0.7989	0.0409*

The variance was used to analyze the motivation of different post holders with the motivation mechanism, as shown in Table 6-2. According to the analysis of variance, there are differences in the degree of preference for different motivation factors among different post holders.

Among them, marketing personnel are strongly responsive to the motivation mechanism in such five aspects as salary and welfare, promotion, company atmosphere, individual career planning and training (significant value<0.05). During the design of the motivation mechanism,

we should concentrate on motivating marketing personnel in such aspects as salary, corporate culture, teamwork, career planning, training and promotion, etc.

Technical personnel are strongly responsive to the motivation mechanism in such four aspects as salary and welfare, promotion, company atmosphere and individual career planning (significant value < 0.05). During the design of the motivation mechanism, we should focus on motivating technical personnel in such aspects as salary, corporate culture, teamwork, career planning and promotion, etc.

Management personnel are strongly responsive to the motivation mechanism in such four aspects as company atmosphere, promotion, clear-cut work task and achievement of self-worth (significant value < 0.05). During the design of the motivation mechanism, we should focus on motivating management personnel in such aspects as corporate culture, teamwork, promotion and work achievement motivation, etc.

The degree of preference of people at different positions for the same motivation factor was also different.

For salary and welfare motivation, the level of response of technical personnel and marketing personnel was significant (significant value < 0.05). For the promotion motivation, the level of response of technical personnel, marketing personnel and management personnel was significant (significant value < 0.05). For the vacation reward motivation, the level of response of technical personnel, marketing personnel and management personnel was not significant without exception (significant value > 0.05). For training motivation, the level of response of marketing personnel was significant (significant value < 0.05). For more challenging tasks to achieve self-worth motivation, management personnel had a significant degree of response (significant value < 0.05). For public praise motivation, the level of response of technical personnel, marketing personnel and management personnel was not significant without exception (significant value > 0.05). For desirable company atmosphere motivation, the level of response of technical personnel, marketing personnel and management personnel was significant (significant value < 0.05). For personal career planning

motivation, the level of response of technical personnel and marketing personnel was significant (significant value <0.05). For the job matching motivation, the level of response of technical personnel, marketing personnel and management personnel were not significant (significant value > 0.05). For the motivation of task force, management personnel responded significantly (significant value <0.05).

Therefore, based on employee needs and the achievement of the corporate goal, the effectiveness of motivation should be synthesized and the motivation structure of the company be gradually improved. By determining appropriate posts and salary for company personnel, different motivation mechanisms should be developed for different posts according to different preferences of various post holders for motivation.

The motivation mechanism of marketing personnel should rely mainly on its motivation measures such as salary & welfare, personal development, corporate culture, teamwork, career planning, training and promotion to constitute the motivation system of marketing personnel, with a view to mainly realizing the corporate goal of signing a new contract.

The motivation mechanism of technical personnel should rely mainly on its motivation measures such as salary and welfare, corporate culture, teamwork, promotion and personal development to constitute the motivation system of technical personnel, with a view to mainly realizing the corporate goal of profit.

The motivation mechanism of management personnel should rely mainly on its motivation measures such as corporate culture, teamwork, personal development, promotion and work achievement to constitute the motivation system of management personnel, with a view to realizing corporate objectives of management and operation by enhancing department satisfaction and coordination.

6.3 Performance analysis of personnel

The performance results of CSADI Engineering & Technology Co., Ltd. in 2016 and 2017 were compared before and after the operation of the motivation model, so as to verify the

effectiveness and efficiency of the motivation model. For the performance assessment form of CSADI Engineering & Technology Co., Ltd., refer to the Appendix III. Performance assessment of personnel is carried out in such six aspects as experience and knowledge, professional skills, sense of responsibility, work coordination, work enthusiasm and special bonus/deduction.

Among them, five specific evaluation criteria were set in five aspects: experience and knowledge, professional skills, sense of responsibility, work coordination, and work enthusiasm, with the assignments given respectively. Four specific evaluation criteria were set for the special bonus/deduction items with the assignments given. The final score was weighted by self-rating scores and superior scores, with the self-rating scores accounting for 30%, and superior scores accounting for 70%.

After one-year operation of the motivation model, we made statistics of the performance assessment results of different post holders in 2016 and 2017, and made statistical analysis, as shown in Table 6-3. According to the performance comparison, it can be seen that under the motivation model, there is a very significant improvement in the performance measurement score of every post holder.

Table 6-3 Personnel Performance Analysis and Comparison

Post	Year	Experi- ence & knowled- ge (mean of the work)	Profess- ional skills (mean of the work)	Sense of respon- sibility (mean of the work)	Work coordinat- ion (mean of the work)	Working enthusi- asm (mean of the work)	Special bonus/ deduct- ion points(mean of the work)	Total (mean of the work)
Marketing	2016	13.14	11.43	12.00	10.29	12.57	12.00	71.43

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	2017	15.43	16.00	14.29	12.00	15.43	17.00	90.14
	Variance		0.0057*				0.0011	0.0001
	F-value	0.0989	*	0.3005	0.0554	0.0334*	**	**
	2016	12.30	12.98	11.77	11.32	10.72	12.47	71.57
Technical	2017	13.89	14.64	13.06	12.91	12.83	15.70	83.02
	Variance		0.0021*	0.0007		0.0000*	0.0002	0.0000
	F-value	0.0051**	*	**	0.0001**	*	**	**
	2016	13.43	12.29	14.00	15.14	12.86	9.93	77.64
Administrative	2017	14.00	14.57	16.29	16.29	15.43	11.86	88.43
	Variance					0.0111*		0.0097
	F-value	0.5196	0.0506*	0.0842	0.3000	*	0.0611	**

According to the analysis of all basic points of performance measurement, it can be seen that the motivation model has different effects for the performance improvement of different post holders. For the marketing personnel, there is a highly significant performance improvement in the aspects of professional skills and special bonus points (undertaking of projects and settlement of important matters) ($F < 0.01$), as well as a significant improvement in work enthusiasm ($F < 0.05$). Therefore, the design of the motivation model needs to focus on the improvement of marketing personnel's sense of belonging to the company, their opportunity of participation in company management and inter-departmental communication & coordination as well as other motivation factors.

For the technical personnel, there is an extremely significant performance improvement in experience & knowledge, professional skills, sense of responsibility, work coordination, work enthusiasm and special bonus points ($F < 0.01$), suggesting that the motivation model is more

suitable for the technical personnel of the company.

For the management personnel, there is an extremely significant performance improvement in work enthusiasm ($F < 0.01$) and a significant performance improvement in professional skills ($F < 0.05$). It can be seen that the motivation mechanism is less effective for the performance improvement of the management personnel. Considerable personal development and promotion motivation can motivate the work enthusiasm and autonomous learning of administrative personnel, but the motivation in the aspects of qualification for special tasks (special bonus points), sense of responsibility and experience & knowledge are not significantly effective despite certain effects obtained. Therefore, when designing and perfecting the motivation model, we should emphasize on such motivation factors as personal development, work achievement, promotion and teamwork.

6.4 The design and perfection of the motivation model

Through the comparison of the motivation of the personnel of CSADI Engineering & Technology Co., Ltd. with motivation factors and their performance assessment results before and after the operation of the motivation model, the existing motivation model was designed and perfected to obtain the new motivation mechanism model of CSADI Engineering & Technology Co., Ltd. (as shown in Figure 6-2), in order to better motivate corporate personnel to achieve their personal goals and meanwhile maximize the achievement of the corporate goal.

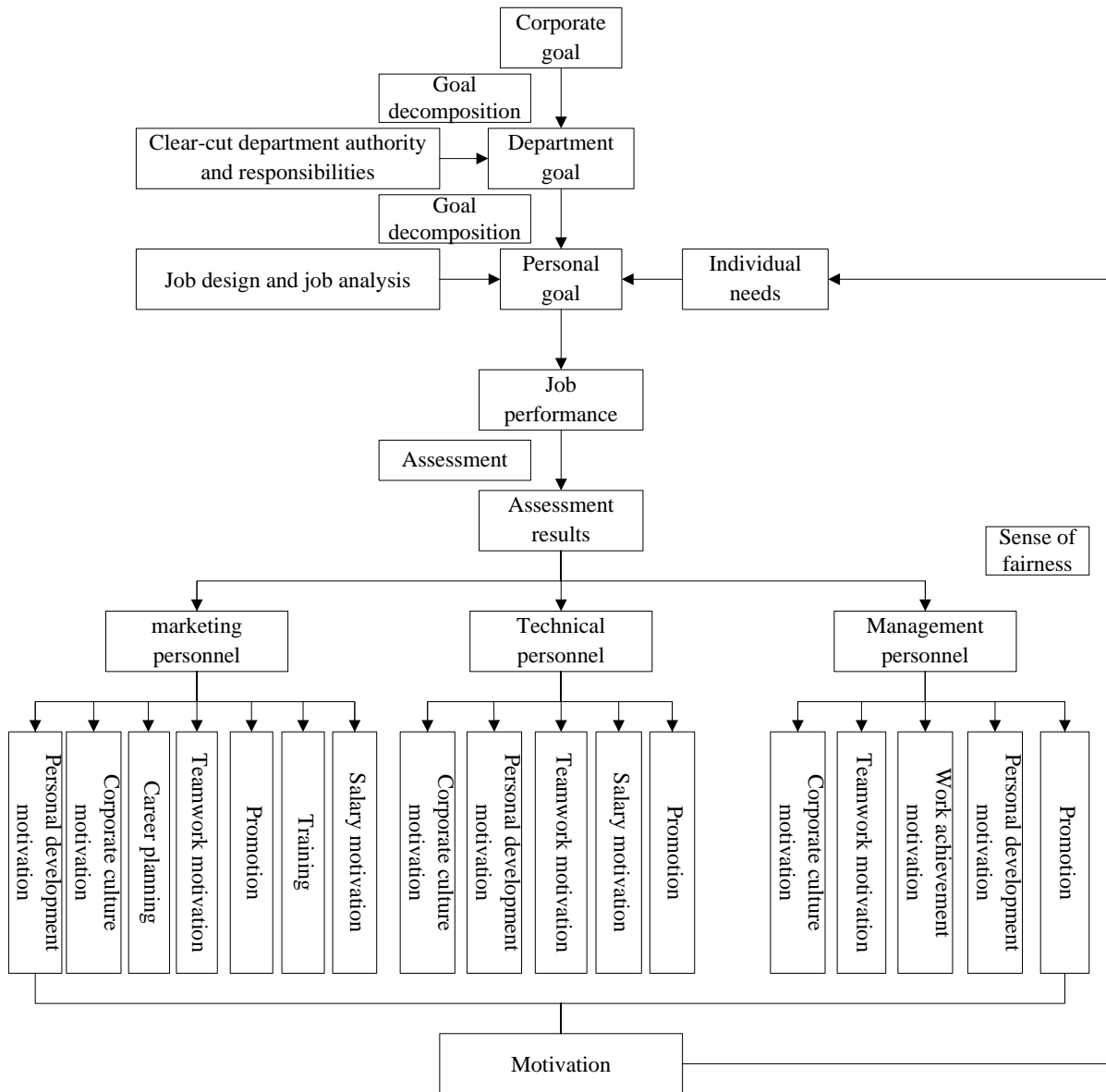


Figure 6-2 Secondary correction of the motivation model of CSADI Engineering & Technology Co., Ltd.

According to the characteristics of different post holders, the new motivation mechanism makes different motivation measures according to marketing personnel, technical personnel and management personnel. For the marketing personnel, there are seven motivation factors: personal development incentive, corporate culture motivation, career, teamwork motivation, promotion, training and salary motivation. For the technical personnel, there are five motivation factors: corporate culture motivation, personal development motivation, teamwork motivation, salary motivation and promotion. For the management personnel, there are five

motivation factors: corporate culture motivation, teamwork motivation, work achievement motivation, personal development motivation and promotion.

6.5 Summary of this chapter

This chapter first designs the motivation model according to the questionnaire results of motivation factors. This model aims to motivate the employees of CSADI Engineering & Technology Co., Ltd. in terms of such five major motivation factors as professional development, sense of belonging, salary and welfare, post matching and department coordination.

Then, the chapter conducts motivation survey and performance analysis of different types of employees, compares them with those before the establishment of the motivation model for analysis, concluding that marketing personnel, technical personnel and management personnel should be motivated respectively, and makes secondary correction of the motivation model in accordance with the principle.

Chapter 7: Main Contents of the Motivation Model

This chapter puts forward the main contents of the corrected motivation model from the aspects of career development system, salary and welfare system, sense of belonging to the enterprise, team cooperation system, job matching system and other motivation, and presents the performance evaluation for the implementation of the motivation mechanism.

7.1 Establishing a sound career development system

All company staff focus on their career development, and aim to do well in current jobs and be qualified for present positions. In addition to this, in order to make themselves improved to a greater extent, they pay more attention to their future career development, and in the absence of adequate opportunity, the loss of talented people can be caused. Therefore, when establishing the motivation mechanism, we should work out a clear-cut career development plan for employees. Through the analysis of the variance of motivation factors, people from different backgrounds have the greatest preference for career development factors. Therefore, during the design of the motivation mechanism, employees' career development should be fully motivated, including personal development, promotion, training and career planning.

According to the characteristics of different post holders, marketing personnel should be emphatically motivated in the aspects of personal development, career planning, promotion and training; technical personnel and management personnel should be emphatically motivated in the aspects of personal development and promotion.

7.1.1 Personal development motivation

Personal development motivation is aimed at establishing career goals and development direction for employees according to their own goals and demands, determining their work

training plans and career development plans by selecting a career development path for them, and fixing the timetable and plan for work behavior to achieve their objectives of career planning, and moreover in combination with the development and operational goals of the company, assigning appropriate jobs for employees, providing the path and environment of development, and offering various kinds of support, to realize their career goals and corporate goals.

Personal development motivation includes the two major aspects of professional development and job development, i.e. training and promotion motivation, and according to personal conditions, backgrounds, abilities and willingness aims to develop training and development plans for employees and to assist them in improving their professional skills and ability to work. By keeping improving the professional knowledge of technical personnel, and combined with the promotion motivation, this motivation can enable all post holders to pursue their career goals.

7.1.2 Promotion motivation

Promotion refers to the promotion of employees from a lower level to a higher level by giving them more rights and responsibilities. It is an affirmation of employees with outstanding performance and contributions. This is an important motivation measure for the company. In this way, excellent talents can be selected and employees' work enthusiasm and initiative can be enhanced.

To build a diversified promotion channel, employees can not only choose technical posts for promotion, but also choose management posts for promotion (see Table 7-1 for details), and posts at the same level have the same salary, welfare and status. The management post positions include office office clerk, supervisor, deputy director(middle-level deputy), department, director(middle-level principal), vice president (management). The technical post titles include technician, primary title, intermediate title, assistant chief engineer, chief engineer.

The company should establish a fair, open and impartial promotion mechanism, so that all

employees have equal promotion opportunities. Through regular and irregular performance appraisals, the company should investigate employees' work ability, work performance, work attitude, and according to employees' background characteristics and supervisors' opinions select really excellent employees for promotion motivation, so as to inspire all employees' work enthusiasm and motivation to help complete the corporate goal.

Table 7-1 Promotion Routes of Different Modes

Position	Title
Office Clerk	Technician
Supervisor	Primary Title
Deputy Director(middle-level deputy)	Intermediate Title
Department Director(middle-level principal)	Assistant Chief Engineer
Vice President (management)	Chief Engineer

7.1.3 Training motivation

Training motivation aims to conduct staff training to let the staff learn about all rules and regulations of the company and learn various work skills and experience as soon as possible, improve their work efficiency and work ability, and stimulate the potential and work enthusiasm of employees to devote themselves to work quickly, so as to realize the corporate goal. Engineering enterprises should intensify their efforts in training project management personnel. With regard to the training before the commencement of construction of the project, the content of training should be determined in combination with the specific situation of the

project and individual actual needs, so as to make project management personnel familiar with the status of the project and accumulate working experience.

In terms of training content, targeted training should be conducted according to different majors, positions, departments, career planning, interests and different needs of employees. Training should be people-oriented, enabling employees to participate in the training. Interactive teaching including group discussion, case study and role playing can be adopted to give play to the staff's subjective initiative, and make training focus on instructiveness, discussion, analytical investigation and practicalness.

The training report should be fed back to the employee himself/herself, direct supervisor, training supervisor and management, et al., but adequate attention should be paid. Insufficient feedback will make employees unable to have a good grasp of training effects, thus failing to realize the purpose of feedback; frequent feedback will make employees tired, resulting in their negative psychology of conflict. Moreover, it is also necessary to establish a platform or mechanism for sharing training knowledge, so as for every employee to have an opportunity to participate in the training, thus expanding the benefit area of training.

7.2 Establishing a comprehensive salary and welfare system

Through the analysis of motivation factors, it's clear that technical and marketing personnel have a high preference for salary motivation. The salary motivation has a remarkable motivating effect on such two types of employees. By means of post salary + project bonus + welfare salary, different post holders can be motivated by adjusting the proportion of all kinds of salary and raising corresponding factors (Deng, 2006).

Post salary should be determined according to the situation of post delimitation. For skilled workers, their post salary should be determined according to such comprehensive factors as skills, strength, technical content and environment of completed amount; for marketing personnel, their monthly basic post salary should be determined according to their competence and departmental annual goals of newly signed contract amount; for administrative

personnel, the relatively stable post salary should be set according to their competence and administrative position.

Project bonus: For technical personnel, the completion of construction by project construction technicians should be assessed on a monthly basis according to the weekly project report system, so as to allocate a certain proportion of project bonus to them. For marketing personnel, motivation should be developed according to the market situation of the company; the contract amount newly signed by each department should be counted on a quarterly basis; the project amount should be fixed according to the contribution from marketing personnel, a certain percentage of project bonus be paid quarterly, and then the remaining part of the project bonus be paid after the assessment of the quality of the completed project. Through real-time assessment and real-time project rewards, the effectiveness of the motivation mechanism can be guaranteed at all times.

Welfare salary: According to differences of different posts in welfare needs and preference, specific welfare motivation should be offered, including pension, housing accumulation fund, annual leave, health examination, entertainment and fitness plan, company group characteristic activities, etc. for selection by employees with different needs on their own.

7.3 Establishing a sense of belonging to the company

The study on motivation factors indicates that employees of the company have a strong preference for belonging, and that a good development vision and a strong corporate culture of the company can stimulate employees' strong enthusiasm for struggling. Among the motivation of belonging, we should pay high attention to the motivation of corporate culture and development prospect of the company.

7.3.1 Corporate culture motivation

Corporate culture is an extension of the company system and the code of conduct for employees, which is formed gradually in the long-term development of the company and can

also be established in a certain way. The construction degree of corporate culture directly affects the implementation of a series of rules and regulations of the enterprise, including the effectiveness of the motivation mechanism, and then affects the completion of enterprise goals. The company should build a desirable, positive, healthy and harmonious corporate culture and company atmosphere, so as to improve the work enthusiasm of employees, enhance their sense of belonging to the company and a sense of pride, increase the cohesion, productivity and competitiveness of the company, stimulate staff to consciously maintain the image, honor and interest of enterprise, and promote the completion of enterprise goals (He & Gao, 2011). A good corporate culture is the basis for the application of the motivation mechanism. The company can build its corporate culture in the following aspects:

(1) Enhance the publicity of corporate culture. Enhancing the publicity of corporate culture is an important guarantee for the effective operation of corporate motivation mechanism. Through the publicity of corporate culture, we can increase employees' understanding of the operation of the motivation mechanism, so as to eliminate employees' concerns about the operation of the system and obtain employees' support. The enterprise can timely and effectively transmit corporate culture in multiple ways like visual system, network, publication and activities, and build the structure of corporate culture.

(2) Build good relationships. A good interpersonal relationship is the fundamental psychological needs of employees. Only by helping employees build a more harmonious interpersonal atmosphere, the company can increase the staff's sense of belonging to the enterprise, thus making them strive for corporate goals more actively.

(3) Regulate the behavior of managers themselves. Company managers should strictly standardize their own behaviors and set themselves an example to others, so as to create a good working atmosphere.

7.3.2 Company development motivation

A good strategic development plan can motivate employees to work harder. Therefore, the

company should plan its own development strategy blueprint, to effectively motivate its personnel to clearly define their own work goals, thus achieve the motivation effect. The company should formulate the long-term development direction by combining its own development goal, and elaborate this vision and how to implement it to employees, stimulate the sense of ownership and passion of the personnel, and make them work toward the goal unremittingly.

The development goal should be feasible and practical. The company should regularly announce the achievement of its goal and reward the contributors to achieve the motivation effect. Meanwhile, the development strategy should be adjusted in time according to the change of external environment, so that the development motivation of the company can motivate its personnel in a timely manner.

7.4 Establishing a team cooperation system

A team is a community of employees, in which the knowledge and skills of each employee are used to coordinate work, solve problems and achieve common goals. Through the above research, company personnel have a significant preference for team cooperation and department cooperation & coordination, and marketing personnel, technical personnel and management personnel have a preference for team cooperation motivation. In the motivation design, we should pay attention to the motivation factor of teamwork.

The teamwork motivation should emphasize the concept of team cooperation and build trust, care and support among team members. At work a good working atmosphere should be established; employees should unite and help each other to solve problems. Communication should be strengthened; any inter-departmental task involved at work requires mutual cooperation to improve the overall operating efficiency of the company, and motivate employees' working enthusiasm.

Talented people are the company's most valuable assets. In order to ensure that the motivation mechanism can effectively motivate the employees, the company must establish a

concept of respecting the talented people from the top down, create a good atmosphere of appreciating the talented people within the company, and let the employees feel the collective care and concern, so that they will continuously develop its potential, and grow and progress together with the company.

7.5 Establishing a job matching system

The company can let employees have the opportunity to fully show their talent by appropriate work design, providing challenging work and improving work acceptance rate, and then assign each employee to an appropriate post through suitable post matching, so as to inspire their work enthusiasm, improve working initiative and meet their job satisfaction to help achieve corporate goals.

By letting the employees understand the responsibilities of each position and combining their own development plans, the company will enable each employee to work hard in the right position to achieve their own value while helping the company achieve its corporate goals and serve the society. Employees' posts cannot be static, but should be adjusted according to their personality characteristics and skill changes in a timely manner so that their abilities can be fully utilized. As to the high-quality employees, on the basis of fully examining their abilities, the company should arrange jobs that match their individual abilities, so as to guarantee their enthusiasm and creativity, and avoid the loss of talented people. As to the employees who are not capable, the company should not be demanding, but should arrange jobs for them within their competence, so as not to make them downcast. If employees repeat the same work day after day, their enthusiasm will be significantly affected. In the design of the job, employees should be actively listened to, and on this basis, the company should allow for the appropriate rotation, adjust the job positions or job responsibilities of employees so as to enhance their work enthusiasm.

7.6 Other motivation

7.6.1 Emotional motivation

At an engineering technology enterprise, a large number of project managers have been working on the project site for a long time, and they lack sufficient communication and exchange with other employees of the company. A variety of ways can be adopted to promote communication and exchange among employees, for example, regularly releasing some briefings of the company to let all employees get to know the company's present situation and goals, and enhancing the sense of identity with the company; conducting regular interviews with employees to understand their specific needs; organizing some colorful leisure activities regularly to enhance the understanding among employees.

Humanistic care should be strengthened. The company should make employees feel its concern in such ways as sympathy and inspection, and help employees to solve difficulties of immediate concern in a timely manner, so as to let employees have no worries about the rear and motivate staff to actively work hard. At present, the company mostly uses material motivation. On the basis of meeting the material needs of employees, it is necessary to increase the emotional motivation to make employees feel care and stimulate their working enthusiasm.

7.6.2 Example motivation

Excellent employees of the company should set an example to all of the other employees who are called on to learn from them. Employees with goals will follow the example, and discipline themselves according to the standard of the example at work, which can greatly improve the work enthusiasm and effort level of employees, and at the same time motivate the employees setting an example for others to work harder and play a better exemplary role for other employees.

7.6.3 Goal motivation

Goal motivation aims to motivate employees to work hard towards the job objectives set for them, so as to arouse their working enthusiasm and initiative. In engineering projects, the projects objective should be defined before the start of each project; the project manager should, on behalf of the project department, sign a letter of responsibilities of project objectives with the company, and then decompose the letter into each manager of the project department, to let everyone clearly understand his/her job objective, make all employees work hard towards their goals, and achieve the unity between project objectives and personal goals. Moreover, the company should create a fair environment so that every employee has an equal opportunity to achieve their own goals.

7.7 Performance evaluation for the implementation of the motivation mechanism

7.7.1 Establishing a sound performance assessment system

To establish and perfect a scientific performance appraisal system, we should pay attention to the rational, effective and exact decomposition of strategic goals of the company to guarantee the competitiveness, fairness and timeliness of the performance assessment system, and meanwhile take care to control assessment and monitoring costs (Lu, 2011). During the establishment of the assessment system, attention should be paid to the quantitative or qualitative description and investigation, as well as the feedback and adjustment of information. In the process of establishing the performance assessment system, attention should also be paid to the structure and proportion of performance and salary such as post salary, skill salary, performance salary and structure salary. Furthermore, we should pay attention to the performance of the assessment team and individuals, and also ensure the solidarity within the organization.

In the process of establishing the performance appraisal system, it is necessary to

eliminate the situation that the employees don't understand, clearly know or know the company's performance appraisal system through prior training. None of the employees will feel unfair. On the basis of fairness and transparency, each employee can receive reasonable treatment, thus ensuring the accuracy and authenticity of the assessment information, and truly improving the enthusiasm of employees through performance appraisal. In the performance appraisal, it is necessary to promptly feedback the results of the performance appraisal to the employees, so that the employees can recognize what kind of work performance can be rewarded, which has a high motivation effect. When the employees acquire a clear understanding of their weaknesses and identify the areas to be improved, they can grow and progress, thus promoting the continuous development of the company.

7.7.2 Establishing fair and open implementation guidelines

The company should improve the fair and open implementation guidelines for issues concerning the interests of employees involved in the operation of the motivation mechanism including employee performance assessment, salary and welfare, training and promotion, as well as honor vacation. Therefore, it is of great significance to establish a special supervision mechanism to ensure the fair, open and impartial implementation of the motivation mechanism in the process of implementation.

A corresponding fair and open system is established within the company to ensure the smooth implementation of the motivation mechanism. The effective implementation of the motivation mechanism is inseparable from the guarantee of a fair and open system. In addition to creating a good atmosphere within the company and building the information transmission mechanism of the processes, a formal system is required to establish the motivation mechanism. On the basis of the formal system, on the one hand, it can provide institutional standards for reference, so that employees within the company have rules to follow, and clarifies the company's motivation system, so that employees can work towards the final motivation results. At the same time, this formal system also restricts the behavior of employees, which can reduce the negative absenteeism of employees to a certain extent and

ensure that their behavior is in line with the company's development demands. On the other hand, this fair and open formal system can also provide basis and reference for the talented people outside the company to enter the company. These employees will evaluate their own abilities based on these motivation systems, which will help the company attract more talents, and add pressure on the internal employees and motivate them to work harder.

7.7.3 Establishing an unimpeded communication channel and information feedback mechanism

The enterprise should establish an unimpeded communication channel and information feedback mechanism. The company can strengthen communication and exchange with employees to fully understand their needs and ideas, and collect their opinions scientifically. It can regularly or irregularly hold the symposium of employees or get to know the needs of employees in the form of questionnaires, and guide them to actively express their own opinions and suggestions, so as to provide direction for the continuous improvement of the motivation mechanism.

Through the establishment of smooth communication channels and information feedback mechanisms, various motivations can be implemented unimpededly. For the employees, the psychological feeling of being respected and being listened to is an important part of their effective motivation. In the daily operation of the company, in order to maximize the effectiveness of the motivation, on the one hand, the company should ensure that these motivation can effectively implemented, on the other hand, it is necessary to continuously listen to employees' opinions and understand their needs and feelings through smooth communication channels according to the actual situation of the company, so as to improve and adjust the existing motivation, thus constantly optimizing the motivation.

7.8 Summary of this chapter

This chapter first puts forward the main contents of the corrected motivation model,

including establishing a sound career development system, establishing a perfect salary and welfare system, establishing a sense of belonging to the enterprise, establishing a team cooperation system, establishing a job matching system and other motivation, as well as performance evaluation for the implementation of the motivation mechanism.

Establishing a sound career development system including personal development motivation, promotion motivation, training motivation. Establishing a sense of belonging to the enterprise including corporate culture motivation, company development motivation. Other motivation including emotional motivation, example motivation, goal motivation.

Performance evaluation for the implementation of the motivation mechanism including establishing a sound performance assessment system, establishing fair and open implementation guidelines, establishing an unimpeded communication channel and information feedback mechanism.

Chapter 8: Conclusions

In this chapter, by unscrambling and summarizing the analysis on motivation factors of the employees of engineering-type state-owned enterprises, the author draws the research conclusions of this thesis.

In this thesis, with the employees of CSADI Engineering & Technology Co., Ltd. as the research object, research results of motivation factors from domestic and foreign scholars are summarized through literature research, then motivation factors for the employees of CSADI Engineering & Technology Co., Ltd. are extracted through satisfaction survey, and finally the questionnaires of motivation factors are worked out on this basis.

Motivation factors are studied by ways of reliability analysis, validity analysis, factor analysis and variance analysis. On the basis of the study on motivation factors, the motivation model for the employees of CSADI Engineering & Technology Co., Ltd. is proposed, motivation survey and personnel performance comparison method are used to validate the effectiveness of the model, and the motivation mechanism model of CSADI Engineering & Technology Co., Ltd. is finally put forward, in order to provide certain reference significance for the research on motivation factors of engineering-type state-owned enterprises. Finally, the main contents of motivation model and the measures of motivation mechanism implementation are put forward.

The main conclusions are shown as follows:

1. The design of the motivation mechanism of engineering-type state-owned enterprises should focus on the following aspects: salary and welfare, career development, working environment, work atmosphere, teamwork and corporate culture.
2. According to factor analysis, the main motivation factors of CSADI Engineering & Technology Co., Ltd. are career development (20.113%), sense of belonging (15.413%), salary

and welfare (13.151%), post matching (7.691%), and department coordination (7.615%). In the process of motivation, the company should not solely depend on material motivation, and should increase motivation for personnel career planning development, and at the same time establish the inheritance of richer corporate culture, improve employees' sense of belonging to the company, and meet the needs of employees in all aspects.

3. As can be seen from the analysis of variance, employees with different background characteristics, such as gender, age, educational background, title, post type, working age, salary level and entry time, also have different needs and preferences for motivation. According to the demands of personnel with different background characteristics and the degree of preference for motivation in the process of motivation, corresponding targeted motivation should be offered to different types of employees, so as to improve their job motivation for achieving the corporate goal in a better way.

4. In this thesis, the motivation mechanism model for engineering-type state-owned enterprises is established, and the motivation model has significant effects for improving employee motivation and personnel performance.

5. The motivation mechanism should make different motivation measures according to the personnel characteristics of different posts. Marketing personnel should be motivated from the aspects of personal development, corporate culture motivation, career, team cooperation motivation, promotion, training and salary. Technical personnel should be motivated from the aspects of corporate culture, personal development motivation, team cooperation motivation, salary motivation and promotion. Management personnel should be motivated from the aspects of corporate culture, team cooperation motivation, work achievement motivation, personal development motivation and promotion.

6. The main contents of the motivation mechanism include establishing a sound career development system, establishing a comprehensive salary and welfare system, establishing a sense of belonging to the company among, establishing a team cooperation system, establishing a job matching system and other motivation.

Measures adopted to ensure the implementation of the motivation mechanism include establishing a sound performance assessment system, establishing fair and open implementation guidelines, and establishing an unimpeded communication channel and information feedback mechanism.

Chapter 9: Limitations and Future Research Prospects

By studying the motivation factors of engineering-type state-owned enterprises, this thesis has established the motivation mechanism model and obtained considerable results. However, due to the author's limited ability, there are still many Limitations in this thesis, which are summarized here, with future research prospects.

1. The problem of representatives of the case study. In this thesis, we try to establish an motivation model of engineering technology state-owned enterprises for small and medium-sized enterprises, which can be used for research and reference. However, just with CSADI Engineering & Technology Co., Ltd. as a sample, due to the influences from the company itself, local external environment and industry, as well as other aspects, the sample cannot completely represent the basic characteristics of motivation mechanisms of small and medium-sized engineering-type state-owned enterprises. In the future research, we can improve the representativeness of the model by studying a wider range of samples, so as to make the motivation model more appropriate for engineering-type state-owned enterprises.

2. The problem of questionnaire survey design. The questionnaire survey was designed according to the current characteristics of CSADI Engineering & Technology Co., Ltd., mainly considering the size, personnel structure and other features of the company. The design of the questionnaire survey is not universally applicable. Motivation factors considered in the design of questionnaire questions include material motivation, emotional motivation, training motivation and promotion motivation, lacking more comprehensive analysis. In the future study the scope of questionnaires can be further expanded to improve the questionnaire design.

3. This thesis lacks a more quantitative and qualitative analysis of the case study on motivation factors. In future studies, various backgrounds can be integrated to conduct further quantitative analysis of various factors in a more systematic way.

4. The motivation model of this thesis is still in the stage of trial operation. The time span of model inspection is not enough. As the motivation mechanism is a model of dynamic change, its validity still needs to be continuously validated and adjusted in the future practice because of the impact from external environment factors such as politics, culture, market and so forth.

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Annexes

Appendix I

Motivation Factors Questionnaire

Dear Sir/Madam:

This is a questionnaire about the motivation situation of the company. We need to know your motivation evaluation of the company's motivation mechanism. This questionnaire adopts anonymous survey, and the data are used for survey and statistical analysis and are not open to the public. Please answer according to your true intention and score 1-10 points on various motivation factors. Your valuable comments will provide an important basis for the study. Thank you very much for your cooperation and support.

Sincerely thank you for your support and help!

Please rate the following motivation factors from 1-10 scores according to your satisfaction:

- Your job type: 1. Technological position ()
2. Market position ()
3. Management position ()
1. Salary and welfare ()
2. Promotion ()
3. Vacation reward ()
4. Training ()
5. More challenging tasks available to achieve self-worth ()

- 6. Public praise ()
- 7. A desirable company atmosphere ()
- 8. Personal career planning ()
- 9. Job matching ()
- 10. Task force ()

Appendix II

Questionnaire on Motivation Factors

Dear Sir/Madam:

This is a questionnaire about the research on the motivation factors of the company. We need to know your motivation evaluation of the company's motivation mechanism. This questionnaire adopts anonymous survey, and the data are used for survey and statistical analysis and are not open to the public. Please answer according to your true intention. Your valuable comments will provide an important basis for the relevant study. Thank you very much for your cooperation and support.

Sincerely thank you for your support and help !

Question 1: Your gender () [Single choice]

A. Male

B. Female

Question 2: Your age () [Single choice]

A. Below 20 years old

B. 20-35 years old

C. 35-50 years old

D. Above 50 years old

Question 3: Your education background () [Single choice]

A. Postgraduate or above

B. Undergraduate

C. Junior college or below

Question 4: Your job title () [Single choice]

- A. Senior title
- B. Intermediate title
- C. Primary title
- D. None

Question 5: Your length of service (calculated from your actual start date of employment)

() [Single choice]

- A. Within 1 year
- B. 1-10 years
- C. 10-20 years
- D. More than 20 years

Question 6: Your length of service in this company () [Single choice]

- A. Within 1 year
- B. 1-3 years
- C. 3-5 years
- D. More than 5 years

Question 7: Your position () [Single choice]

- A. Middle-level and above
- B. Supervisor
- C. Ordinary staff

Question 8: Your job category () [Single choice]

- A. Marketing
- B. Technology
- C. Management

Question 9: Your current pay level (including bonuses), namely annual income ()

[Single choice]

- A. Below RMB30 thousand
- B. RMB30-60 thousand
- C. RMB60-100 thousand
- D. Above RMB100 thousand

Question 10: Your sense of belonging to the company () [Single choice]

- A. Very strong
- B. Strong
- C. Average
- D. Weak
- E. Very weak

Question 11: Your opportunities to participate in company management () [Single choice]

- A. great many
- B. Many
- C. Average
- D. Few
- E. Very few

Question 12: Your thoughts and ideas at work mostly effectively communicating to ()

[Single choice]

- A. Leader
- B. Colleague
- C. People outside the company

D. Thinking about them yourself

Question 13: Do you have a clear-cut career plan? () [Single choice]

A. Having a definite career plan

B. Having a general plan

C. Confused

Question 14: Do you think your present position is suitable for you? () [Single choice]

A. Completely suitable

B. Relatively suitable

C. Average

D. Completely unsuitable

Question 15: Are you clear about your job responsibilities? () [Single choice]

A. Clear and definite

B. Relatively clear

C. Unclear

Question 16: What do you think of the post establishment of the company? () [Single choice]

A. Very good

B. Good

C. Average

D. Poor

Question 17: Sort all the options listed below from the strongest to the weakest according to your demand degree () [Sorting question]

A. High salary and welfare

- B. Promotion
- C. Vacation reward
- D. Training
- E. More challenging tasks available to achieve self-worth
- F. Public praise
- G. A desirable company atmosphere
- H. Personal career planning
- I. Right position
- J. Clear-cut work task

Question 18: Your expected annual salary is () [Single choice]

- A. RMB50-70 thousand
- B. RMB70-90 thousand
- C. RMB90-110 thousand
- D. RMB110-130 thousand
- E. RMB 150 thousand

Question 19 Did the company guide you in planning your career () [Single choice]

- A. Yes
- B. No

Question 20 You think that the appropriate training frequency is () [Single choice]

- A. Once a quarter
- B. Once every two months
- C. Once a month
- D. 2 times a month

Question 21 You are now in urgent need of training in what field of knowledge ()

[Multiple choice]

- A. Specialized technical knowledge
- B. General legal knowledge
- C. General financial knowledge
- D. General social etiquette and business
- E. No training required
- F. Others (please specify)

Question 22 Do you have a clear understanding of the company's motivation () [Single choice]

- A. Clearly understanding
- B. Knowing some
- C. Knowing nothing

Question 23 Your level of motivation with the company's motivation mechanism () [Single choice]

- A. Quite motivated
- B. Comparatively motivation
- C. General
- D. Relatively unmotivated
- E. Very unmotivated

Question 24 To what extent does the company's motivation mechanism motivate you to work hard () [Single choice]

- A. To a great extent
- B. To a general extent
- C. To a lesser extent

D. No incentive

Question 25 Do you think that your leader has publicly praised you to motivate you to work actively at work () [Single choice]

A. I'm often praised and highly motivated

B. I'm occasionally praised, which is of little effect

C. No praise

Question 26 Do you think that performance assessment procedures of the company are scientific and accurate? () [Single choice]

A. Very scientific, fair, impartial and open

B. Comparatively scientific, fair, impartial and open

C. Unscientific due to lack of objectivity in assessment standards

D. Unscientific due to lack of scientificity in assessment procedures

E. Unscientific due to an extended period of assessment

Question 27 In your opinion, which one of the following situations does the bonus distribution of the company fall into? () [Single choice]

A. Distribution made strictly according to the contribution size, with an obvious difference in grades of distribution

B. Distribution made basically according to the size of the contribution, but there's not much difference

C. Basically equalitarian "big-pot" distribution, without much difference between much work and less work as well as good work and bad work

D. Indefinable

Question 28 Do you think the training organized by the company is beneficial to work development and self-improvement () [Single choice]

A. Considerably beneficial

B. Comparatively beneficial

C. Somewhat beneficial

D. Basically unbeneficial

Question 29 How do you think the company is doing to support the development of talented people () [Single choice]

A. Doing very well

B. Doing relatively well

C. Oral support, lacking implementation measures

D. Nonsupport

Question 30 Do you think the motivation mechanism of the company is fair in the process of its implementation () [Multiple choice]

A. Very fair

B. Comparatively fair

C. Average

D. Unfair

Question 31 What do you think of the communication and cooperation among departments at work () [Single choice]

A. Very good

B. Fairly good

C. Average

D. Fairly poor

Question 32 In your opinion, the best training method is () [Single choice]

A. Irregular internal training

B. Short-term off-job training

C. Part-time short-term training

D. On-the-job academic and degree education

Appendix III

Employee Performance Assessment Form of CSADI Engineering & Technology Co., Ltd.

Assessed employee's name:	Assessed employee's position:		Time:	Date:
Assessment index		Score	Self-assessment	Scoring by department heads/sub-heads
I. Experience & knowledge	1. Able to comprehend knowledge and experience by analogy, and often offer suggestions for improvement	20		
	2. Having better knowledge and experience than others	16		
	3. Being willing to make progress and accept guidance, and able to cope with work	12		
	4. Having no much desire to make process, and still requiring strengthening training.	8		
	5. Being utterly ignorant of job requirements and careless at work	4		
II. Professional skills	1. Having strong professional skills and being able to fully complete own work	20		
	2. Having considerable professional skills and being able to cope with own work	16		
	3. Having general	12		

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	professional skills, but there are no obstacles to the completion of work.			
	4. Being slightly insufficient in skill level, and often needing to consult others while performing tasks	8		
	5. Being unfamiliar with the skills necessary for work, and it is difficult to complete routine work	4		
III. Sense of responsibility	1. Bearing responsibility without grudge, and doing your best to accomplish tasks	20		
	2. Working hard, and being able to complete your own job/work very well.	16		
	3. Having a sense of responsibility and strong independence.	12		
	4. Any work consigned can be completed only under supervision.	8		
	5. Being perfunctory, irresponsible and careless	4		
IV. Work coordination	1. Coordinating with others well and doing your best to complete work smoothly.	20		
	2. Loving your community and often helping others.	16		
	3. Being willing to help others according to their needs.	12		

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	4. Coordinating and cooperating with others only when necessary.	8		
	5. Being undisciplined and unwilling to cooperate with others	4		
V. Working enthusiasm	1. Being law-abiding and a role model for others.	20		
	2. Working enthusiastically and supporting various policies of the company	16		
	3. Being interested in your work and doing no irrelevant things or making no jokes during work hours	12		
	4. Working without perseverance and under mental depression, and being dissatisfied with reality, and often complaining.	8		
	5. Being arrogant and often instigating others to make unreasonable demands on the company	4		
VI. Special bonus/deducti on (10 points at maximum per item)	1. Making significant innovation in the business hosted by you, proposing plans, and achieving outstanding results after adoption.	0-10 points		
	2. For any fraud or harm to the rights and interests of the company, you can report or prevent it in advance, so as to protect the company from losses.	0-10 points		

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	3. Market development awards. Each development project can obtain 2 to 10 points.	0-10 points		
	4. Attendance rewards and punishments: score (=attendance rate*10	0-10 points		
	Subtotal	40 points		
	Weight		30%	70%
Score (self-assessment + score from superior leaders)				
Scoring standards	Excellent(100-110), good(85-99) , pass(70-84) , fail(0-69) .			
Self-assessment				
Comprehensive evaluation of department heads/sub-heads				
<p>Note: 1. This table is used for the comprehensive ability assessment of employees. 2. The assessment shall be carried out by the annual assessment team of the company. The assessment team shall score the assessed employee according to the opinion from his/her direct department head, and meanwhile refer to the opinions of other team members. 3. The company will comprehensively consider the annual performance assessment results of employees to decide whether to increase or decrease the year-end bonus amount of employees. 4. The purpose of this assessment is to strengthen the aggressiveness of employees and constantly improve the development of the company.</p>				

Appendix IV

Motivation Questionnaire Before the Establishment of the Motivation Model (I)

Sample No.	Post No.	Q1 Option	Q2 Option	Q3 Option	Q4 Option	Q5 Option	Q6 Option	Q7 Option	Q8 Option	Q9 Option	Q10 Option
1	3	3	6	6	5	1	8	4	7	5	8
2	3	8	9	7	4	4	4	2	6	6	5
3	3	1	2	3	5	5	7	6	6	4	9
4	3	1	2	6	3	5	7	6	8	3	6
5	3	9	8	7	4	5	8	2	4	5	6
6	3	4	2	6	2	3	3	6	5	7	8
7	1	1	2	3	6	9	8	4	7	5	6
8	2	2	6	5	2	3	5	6	7	8	7

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9	2	3	5	3	4	2	3	5	8	7	5
10	2	8	9	7	6	5	5	1	4	6	9
11	1	1	5	6	6	4	4	2	8	7	3
12	3	4	6	5	2	3	7	3	4	5	7
13	1	1	2	3	6	5	4	7	9	8	10
14	1	1	2	3	8	7	6	7	6	5	4
15	2	1	7	6	5	4	4	2	6	9	8
16	2	3	4	2	3	2	3	4	5	6	8
17	1	1	7	3	2	4	3	5	6	9	8
18	1	1	3	4	3	5	7	6	8	2	9
19	1	3	7	7	5	2	2	8	4	1	6
20	1	1	3	4	2	9	3	5	7	8	6
21	1	2	6	4	5	3	3	8	1	7	9

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22	3	3	4	8	4	4	5	6	6	5	4
23	1	5	4	3	3	5	9	6	1	2	7
24	1	5	9	6	7	8	2	4	3	1	2
25	1	5	6	5	8	7	4	1	2	3	4
26	1	5	6	6	9	7	5	1	2	3	4
27	1	4	3	4	6	5	4	7	8	1	2
28	1	4	4	3	7	4	5	5	4	5	7
29	1	1	5	6	8	3	6	7	5	5	5
30	1	2	4	8	7	8	3	1	3	5	6
31	3	1	2	4	3	6	3	3	8	6	5
32	3	3	4	6	2	3	4	5	8	8	6
33	3	5	5	4	2	3	5	6	6	4	5
34	3	4	3	5	5	6	8	8	7	5	4

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35	3	3	1	6	3	5	5	8	6	4	3
36	1	2	9	1	7	8	7	3	4	5	6
37	2	1	7	2	7	8	6	4	5	8	8
38	1	3	8	7	8	1	5	5	6	4	2
39	1	8	7	9	4	2	5	5	6	1	3
40	2	1	8	3	6	4	3	7	5	9	9
41	1	2	1	6	4	3	4	5	6	7	8
42	1	7	3	5	4	1	9	8	6	2	5
43	1	4	2	7	8	1	4	3	7	5	6
44	1	2	1	3	4	7	3	3	5	6	4
45	3	6	9	6	4	4	4	5	5	5	2
46	3	4	8	6	4	2	6	5	5	6	8
47	3	6	4	2	2	5	5	2	7	3	3

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48	3	8	7	2	3	1	8	5	8	6	6
49	1	1	2	3	5	4	6	7	8	9	10
50	1	1	2	3	4	5	6	7	8	9	10
51	1	2	4	3	7	7	5	1	6	5	7
52	1	2	3	7	8	7	7	1	6	4	5
53	1	3	6	2	5	3	2	6	7	6	3
54	1	5	9	7	6	2	6	1	3	8	4
55	1	2	3	6	8	4	4	1	7	5	6
56	1	2	2	1	6	1	2	7	8	2	4
57	1	4	6	2	7	2	8	5	3	6	4
58	1	1	3	2	4	5	9	7	7	2	6
59	1	4	9	5	6	2	4	1	8	7	3
60	1	10	9	6	6	5	7	1	2	3	4

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61	1	1	9	2	8	7	3	5	6	3	4
62	1	9	10	4	4	1	8	2	6	3	7
63	1	6	5	2	3	3	5	4	3	3	8
64	2	2	6	4	7	8	7	1	6	6	8
65	2	1	4	3	4	6	3	7	6	8	8
66	2	1	6	6	6	8	3	4	7	7	7
67	1	1	2	3	8	7	8	4	9	5	6
68	2	1	5	6	7	4	8	6	9	7	8
69	1	1	2	3	4	3	1	5	8	7	6
70	1	3	4	6	9	7	6	5	1	2	8
71	1	1	2	3	4	8	1	9	6	7	5
72	1	4	3	5	3	5	5	1	7	2	6
73	3	1	6	2	4	7	5	5	3	9	8

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74	1	1	5	4	3	6	1	4	2	7	8
75	1	2	7	3	4	7	3	5	7	9	5
76	1	3	9	5	4	8	6	1	7	2	6
77	1	2	2	6	5	3	5	2	5	5	6
78	3	10	9	3	3	5	8	4	3	5	4
79	1	4	4	4	3	4	3	6	7	7	3
80	1	2	1	3	4	5	4	6	8	7	9
81	1	1	7	3	9	6	3	2	5	3	4
82	1	1	2	7	6	3	4	5	8	3	4
83	1	1	8	2	7	5	6	3	4	9	10
84	1	7	2	3	6	8	7	4	5	1	9
85	1	9	3	4	1	2	8	4	5	7	6
86	1	4	8	6	2	7	8	1	3	5	6

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87	1	10	8	7	4	6	9	1	5	2	3
88	1	1	3	4	7	6	6	5	6	2	9
89	1	3	2	3	4	6	3	6	9	6	2
90	1	1	6	3	4	5	4	7	8	9	2
91	1	1	4	5	5	2	7	3	3	5	6
92	1	3	5	2	6	4	8	1	6	8	9
93	1	2	6	5	6	6	6	5	2	2	6
94	1	1	2	3	3	5	5	6	5	8	4
95	1	1	7	4	7	6	7	4	5	2	3

Appendix V

Variable Assignment of Motivation Factor Questionnaire

Sample No.	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17Option 1	Q17Option 2	Q17Option 3	Q17Option 4	Q17Option 5	Q17Option 6	Q17Option 7	Q17Option 8	Q17Option 9	Q17Option 10	Q18	Q19	Q20	Q 21 Option 1	Q 21 Option 2	Q 21 Option 3	Q 21 Option 4	Q 21 Option 5	Q 21 Option 6	Q22	Q23	Q24	Q25	Q 26 Option 1	Q 26 Option 2	Q 26 Option 3	Q 26 Option 4	Q 26 Option 5	Q27	Q28	Q29	Q30	Q31	Q 32 Option 1	Q 32 Option 2	Q 32 Option 3	Q 32 Option 4	
1	1	2	3	4	3	2	2	3	4	1	1	1	1	1	1	3	3	6	9	7	1	10	4	2	5	8	5	1	3	1	0	0	0	0	0	1	2	1	1	0	1	0	0	0	1	1	2	2	2	2	2	3	4	1
2	2	2	2	3	2	2	3	3	2	2	2	1	2	2	2	2	8	9	7	5	6	10	2	4	1	3	1	1	1	1	1	1	1	0	0	0	2	2	2	1	0	1	0	0	0	2	2	2	2	3	4	3	2	1
3	2	2	1	4	1	1	3	3	2	3	2	2	2	2	2	2	1	2	3	7	8	10	6	5	4	9	3	1	2	1	1	1	0	0	0	2	3	3	2	0	0	1	1	1	3	3	3	2	3	4	3	1	2	
4	2	2	2	4	2	4	2	3	2	1	3	1	2	1	1	2	1	2	6	5	9	7	10	8	3	4	4	2	1	0	1	0	0	0	0	2	3	2	1	0	1	0	0	0	2	2	2	2	1	4	2	1	3	
5	2	2	2	3	2	2	3	3	2	2	2	1	2	2	2	2	9	8	7	6	5	10	2	4	1	3	1	1	1	1	1	1	1	0	0	0	2	2	2	2	0	1	0	0	0	2	2	2	2	3	4	3	2	1
6	2	2	1	4	2	2	3	3	2	5	3	2	1	2	1	1	4	2	9	5	3	10	6	1	7	8	3	2	4	0	1	1	1	1	0	0	3	3	4	3	0	0	0	0	1	4	3	3	4	4	4	3	2	1
7	1	2	2	4	1	1	3	1	1	2	3	1	1	2	2	2	1	2	3	10	9	8	4	7	5	6	3	1	1	1	0	0	1	0	0	3	4	1	1	0	0	1	0	0	3	1	2	3	2	1	0	0	0	
8	1	2	2	4	1	1	3	1	1	1	5	1	1	2	1	2	0	0	0	1	0	0	2	0	3	0	3	1	3	1	1	1	1	0	0	1	1	1	1	1	0	0	0	0	1	1	1	1	2	1	0	0	2	
9	1	4	3	2	4	1	3	1	3	1	3	1	2	3	2	2	4	0	5	0	0	0	1	0	2	3	5	2	1	1	1	1	0	0	0	3	3	3	4	0	0	1	0	0	4	3	3	4	4	0	2	0	1	
10	1	2	1	4	2	2	3	2	2	1	3	1	2	2	1	2	8	7	9	6	5	10	1	2	3	4	2	1	2	1	1	1	1	0	0	1	2	1	1	0	1	0	0	2	1	2	2	2	2	4	3	1		
11	1	2	2	3	2	1	3	1	2	5	5	4	2	3	2	1	1	5	6	10	4	9	2	8	7	3	3	2	1	1	0	0	1	0	0	2	5	4	2	0	0	1	1	0	4	4	4	4	1	1	3	4	2	
12	2	2	1	4	1	1	3	2	2	3	5	2	2	3	1	1	0	3	0	0	1	0	0	2	0	0	2	2	3	1	0	1	1	0	0	2	3	2	1	0	0	1	0	0	2	1	2	2	2	0	2	0	1	
13	1	2	2	4	2	3	2	1	2	2	2	1	1	2	1	2	1	2	3	6	5	4	7	9	8	10	5	1	1	1	1	1	1	0	0	0	2	3	2	1	0	1	0	0	0	2	3	3	3	3	4	3	2	1

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14	1	2	3	3	2	1	3	1	3	1	2	1	1	2	2	4	1	2	3	8	10	9	7	6	5	4	4	2	1	1	0	1	0	0	0	2	3	1	1	0	1	0	0	0	2	1	2	2	2	1	2	4	3
15	2	2	2	2	3	2	2	2	2	3	3	4	1	3	1	4	1	3	0	0	2	0	0	0	0	0	3	2	3	1	1	1	0	0	0	3	5	4	2	0	0	1	1	0	4	3	3	3	3	0	0	2	1
16	2	2	2	4	3	2	3	3	1	4	4	4	3	3	2	2	1	0	3	5	0	0	2	4	0	0	1	2	3	1	1	1	1	0	0	3	3	3	3	0	0	1	0	0	4	3	3	3	4	2	1	3	0
17	2	2	3	3	2	4	3	1	1	3	3	2	1	2	2	2	1	7	3	2	4	10	5	6	9	8	1	2	1	1	1	1	0	0	0	2	3	2	1	0	0	1	0	0	4	3	3	2	1	4	3	2	1
18	1	3	2	4	3	4	3	1	2	1	4	1	3	2	3	4	1	3	4	10	5	7	6	8	2	9	3	1	1	0	0	0	0	1	0	2	5	3	2	0	0	1	0	0	4	3	3	3	1	1	3	2	4
19	1	3	2	4	3	3	3	1	2	3	4	2	2	2	2	2	3	7	9	5	2	10	8	4	1	6	2	2	2	1	1	1	0	0	0	3	4	3	2	0	0	1	0	0	1	2	2	3	2	3	4	2	1
20	2	2	3	4	2	2	3	1	1	2	5	2	3	2	2	1	1	3	4	2	9	10	5	7	8	6	3	2	1	1	0	0	1	0	0	3	3	3	1	1	0	0	0	0	3	1	2	2	1	3	1	4	2
21	1	2	2	3	2	2	3	1	4	2	4	2	2	2	1	2	2	6	4	5	3	10	8	1	7	9	5	1	4	1	1	1	1	0	0	2	3	1	2	0	0	1	0	0	3	1	3	5	2	1	2	3	4
22	2	2	2	4	2	2	2	3	2	4	5	4	3	3	3	2	3	4	9	8	7	10	6	2	5	1	4	2	1	1	1	0	0	0	0	3	4	4	2	0	0	1	1	0	4	3	3	2	2	2	4	3	1
23	1	2	2	3	2	3	3	1	1	3	5	2	3	3	2	2	5	4	8	3	10	9	6	1	2	7	2	2	2	1	1	1	0	0	0	3	3	4	2	0	1	0	0	0	4	1	2	2	1	4	1	2	3
24	2	2	2	4	2	4	3	1	2	3	3	1	2	3	1	2	5	9	6	7	8	10	4	3	1	2	2	2	1	1	1	1	1	0	0	3	3	3	2	0	0	1	0	0	2	3	3	3	1	1	3	4	2
25	1	2	3	4	1	1	3	1	1	1	5	1	2	2	1	4	5	6	9	8	7	10	1	2	3	4	2	2	1	1	0	0	0	0	0	3	4	1	1	0	1	0	0	0	2	1	1	2	4	2	3	1	4
26	1	1	3	4	1	1	3	1	1	2	5	1	2	2	2	4	5	6	8	9	7	10	1	2	3	4	3	2	1	1	0	0	0	0	0	3	5	1	1	0	1	0	0	0	2	2	1	2	1	2	3	1	4
27	1	3	3	2	3	4	2	1	3	1	2	1	2	2	2	4	4	3	9	6	5	10	7	8	1	2	5	1	3	1	1	1	0	0	0	2	3	2	1	0	0	1	0	0	4	2	3	3	1	2	1	4	3
28	2	2	2	4	2	2	3	2	1	3	5	4	3	2	1	4	1	0	4	0	0	0	3	2	0	0	3	2	4	1	1	0	0	0	0	1	2	2	2	0	0	1	1	1	3	3	3	4	2	1	2	3	4
29	1	2	2	3	2	4	3	1	1	5	5	4	2	3	1	4	1	2	0	0	0	0	0	0	3	0	3	2	1	1	0	0	0	0	0	3	5	4	3	0	0	1	0	0	3	2	3	3	1	0	1	0	0
30	1	2	2	3	2	3	3	1	1	3	4	2	1	3	1	2	2	4	8	7	9	10	1	3	5	6	2	2	1	1	0	0	1	0	0	3	3	3	2	0	0	1	1	0	4	3	3	3	1	4	1	2	3
31	1	4	3	2	4	4	2	3	2	5	1	4	3	3	3	2	1	2	4	7	9	10	3	8	6	5	5	2	1	0	0	0	0	1	0	3	5	4	2	0	0	1	1	0	4	2	2	3	1	4	2	3	1
32	2	2	1	4	2	2	2	3	2	1	1	1	1	1	1	4	3	4	6	2	7	9	5	1	8	10	4	1	3	1	1	1	1	0	0	2	3	2	1	0	1	0	0	0	2	2	3	2	3	3	4	2	1
33	1	2	3	4	3	1	3	3	2	1	4	2	2	2	2	0	0	0	1	2	0	3	0	0	4	1	1	1	1	0	0	0	0	1	2	2	1	1	0	1	0	0	0	2	1	2	6	1	0	1	0	0	

Motivation Factors of the State-owned Enterprise Personnel in China

34	2	2	1	4	1	1	3	3	2	1	2	2	2	2	2	2	4	3	5	6	7	10	8	1	2	9	3	2	4	0	1	0	1	0	0	2	3	3	2	0	0	1	0	1	2	2	2	3	3	4	3	2	1
35	2	2	1	4	2	1	2	3	3	3	3	2	2	2	2	3	1	6	7	5	10	8	2	4	9	4	2	3	1	0	0	0	0	0	3	3	2	2	0	0	0	1	1	2	2	2	2	4	4	2	1	3	
36	1	4	3	2	4	4	3	1	2	2	4	2	2	2	2	2	9	1	10	8	7	3	4	5	6	1	1	1	0	1	0	0	0	0	3	3	3	1	0	1	0	0	0	4	3	3	2	2	1	2	3	4	
37	2	2	2	4	2	2	3	2	2	3	5	2	3	3	2	2	1	3	2	8	9	10	4	5	6	7	2	2	3	1	1	1	1	0	0	3	4	3	2	0	0	1	0	0	3	1	2	3	4	3	2	4	1
38	1	3	3	4	3	2	3	1	2	4	5	2	1	3	1	4	3	8	7	10	1	9	5	6	4	2	5	2	2	0	1	0	0	0	0	3	5	4	2	0	0	1	0	0	1	3	3	3	3	4	3	2	1
39	1	2	1	4	2	2	2	1	2	4	3	1	1	3	2	2	8	7	9	4	2	10	5	6	1	3	5	2	2	1	1	1	1	0	0	2	3	3	2	0	0	1	0	0	3	3	3	3	3	3	1	4	2
40	2	2	1	4	3	4	2	2	2	4	3	1	2	4	3	2	1	8	3	6	9	10	7	5	4	2	5	2	1	1	1	1	0	0	0	2	4	4	3	0	0	1	1	0	4	4	3	3	1	1	2	3	4
41	2	2	2	3	2	3	3	1	2	5	5	4	2	3	1	1	2	1	9	4	3	10	5	6	7	8	3	2	3	1	1	1	0	0	0	3	5	4	3	0	0	1	0	0	3	3	3	4	1	4	3	2	1
42	1	2	3	2	2	2	2	1	3	2	3	1	1	2	1	2	7	3	10	4	1	9	8	6	2	5	5	2	2	1	1	1	0	0	0	1	2	2	1	0	1	0	0	0	2	2	2	2	3	1	4	3	2
43	2	2	1	4	1	1	3	1	2	3	4	3	2	3	2	1	4	2	9	8	1	10	3	7	5	6	3	2	2	1	1	1	0	0	0	3	4	3	2	0	0	0	1	0	3	3	2	2	1	4	1	2	3
44	2	2	3	4	2	1	3	1	1	2	5	2	1	3	1	4	2	1	8	9	7	10	3	5	6	4	5	2	1	1	0	0	0	0	0	2	3	2	1	1	0	0	0	0	1	2	2	2	4	4	3	2	1
45	2	3	2	3	3	4	2	3	3	1	2	1	1	1	1	2	6	9	7	8	4	10	5	3	1	2	5	1	3	1	1	1	0	0	0	2	2	1	1	0	1	0	0	0	2	1	1	2	2	4	3	2	1
46	1	3	3	4	3	3	3	3	2	2	3	2	2	3	2	4	1	0	0	2	0	0	3	0	0	0	2	1	1	1	1	1	0	0	0	2	3	3	2	0	0	1	1	0	4	3	2	2	4	1	2	3	4
47	1	3	3	2	3	3	3	1	1	3	3	2	2	3	1	4	2	4	0	5	3	0	6	0	7	1	3	2	1	1	1	0	1	0	0	3	5	4	1	0	0	1	1	0	4	2	3	3	1	0	0	2	1
48	1	3	3	4	2	4	3	3	2	1	3	2	2	2	1	1	0	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	2	3	2	1	0	1	0	0	0	1	2	2	2	1	1	0	0	0
49	1	2	3	4	1	1	3	1	1	2	2	2	1	1	2	1	1	2	3	5	4	6	7	8	9	10	5	1	1	1	1	1	1	0	0	2	2	1	1	0	1	0	0	0	2	2	2	2	3	1	2	3	4
50	1	2	3	4	1	1	3	1	1	2	2	2	1	1	2	1	1	2	3	4	5	6	7	8	9	10	5	1	1	1	1	1	1	0	0	2	2	2	2	0	1	0	0	0	2	2	2	2	3	1	2	3	4
51	1	3	3	3	3	4	3	1	2	2	4	2	2	2	2	2	4	3	9	8	10	1	6	5	7	2	2	3	1	0	0	0	0	0	2	3	1	2	0	1	0	0	0	2	2	2	2	1	2	3	4	1	
52	1	3	3	3	3	4	3	1	2	2	3	1	2	2	2	1	2	3	7	8	9	10	1	6	4	5	2	2	2	1	0	0	0	0	0	2	3	2	2	0	1	0	0	0	2	2	2	2	1	4	3	2	1
53	2	3	2	4	3	1	2	2	4	2	2	1	2	2	1	2	1	0	2	0	0	0	4	3	0	0	5	1	1	0	0	1	0	0	0	2	2	2	1	0	1	0	0	0	1	2	2	2	3	0	1	0	2

Motivation Factors of the State-owned Enterprise Personnel in China

54	1	3	2	2	4	1	2	1	4	2	2	1	1	2	2	2	5	9	7	6	2	10	1	3	8	4	5	1	1	1	1	1	1	1	0	0	2	2	1	1	0	1	0	0	0	1	1	2	2	3	4	3	2	1
55	2	2	2	4	2	4	3	1	2	1	4	1	2	2	1	1	2	3	9	8	4	10	1	7	5	6	5	2	2	0	0	0	1	0	0	3	3	2	1	0	1	0	0	0	4	3	3	2	4	4	3	2	1	
56	1	2	3	3	2	3	3	1	1	2	3	2	2	2	2	1	1	4	2	0	0	0	5	0	3	0	1	2	1	1	1	0	0	0	0	3	3	2	3	0	0	1	1	0	1	1	2	3	4	4	2	3	1	
57	2	2	2	4	2	3	3	1	1	3	4	4	2	3	1	2	8	7	0	5	6	0	2	1	3	4	2	2	1	1	0	0	0	0	3	3	3	2	0	0	1	0	0	4	4	3	3	3	2	4	3	1		
58	2	2	2	4	1	1	3	1	2	1	3	1	2	1	2	2	1	3	8	4	5	10	7	9	2	6	3	2	2	1	1	1	0	0	0	2	2	2	1	0	1	0	0	0	2	2	2	2	3	2	4	3	1	
59	1	3	2	2	4	1	2	1	4	2	2	1	1	2	2	2	4	9	5	6	2	10	1	8	7	3	5	1	1	1	1	1	1	0	0	2	2	1	1	0	1	0	0	0	1	1	2	2	3	4	3	2	1	
60	1	3	3	3	2	4	3	1	1	1	5	1	1	3	1	2	10	9	8	6	5	7	1	2	3	4	1	1	1	1	0	0	0	0	0	1	2	3	2	0	1	0	0	0	4	2	3	3	4	1	2	3	4	
61	1	3	3	2	4	2	3	1	3	2	3	1	2	2	1	4	1	9	2	8	7	10	5	6	3	4	4	2	1	0	1	1	1	0	0	2	3	2	4	0	0	1	1	0	3	2	3	4	4	4	1	2	3	
62	1	3	2	3	2	2	2	1	4	1	2	1	1	1	1	4	9	10	5	4	1	8	2	6	3	7	5	1	2	1	1	1	0	0	0	1	1	1	1	0	1	0	0	0	1	1	2	2	2	3	2	4	1	
63	1	2	2	2	2	3	3	1	2	3	3	1	2	2	1	2	0	0	1	2	0	0	0	0	0	0	3	1	1	0	1	1	0	0	0	2	2	2	1	1	0	0	0	0	1	1	3	3	1	0	0	0	1	
64	1	2	2	4	2	1	3	2	1	3	3	4	2	2	1	2	2	6	9	7	8	10	1	4	3	5	4	2	1	1	1	1	0	0	0	2	3	2	2	0	0	1	0	0	4	3	3	2	1	1	2	4	3	
65	1	2	2	2	2	4	3	2	2	4	3	1	2	3	1	2	1	2	10	4	9	3	7	6	8	5	5	2	1	1	1	1	0	0	0	3	5	1	1	0	0	1	1	1	4	3	3	3	1	2	4	1	3	
66	1	2	2	2	3	4	3	2	2	4	3	1	2	3	1	2	1	2	10	9	8	3	4	5	7	6	5	2	1	1	1	1	0	0	0	3	5	4	1	0	0	1	1	1	4	3	3	3	1	1	3	4	2	
67	1	3	3	4	2	2	2	1	3	2	2	2	2	3	2	1	1	2	3	8	7	10	4	9	5	6	2	2	1	1	1	1	0	0	0	2	3	3	2	0	0	1	0	0	1	2	3	2	1	2	1	3	4	
68	1	2	2	4	2	2	3	2	2	1	2	1	1	3	2	2	1	2	8	7	4	10	6	9	5	3	3	1	1	1	1	1	0	0	0	2	3	3	1	0	1	0	0	0	2	2	3	3	3	1	2	4	3	
69	1	3	3	4	2	2	2	1	2	2	3	3	2	3	2	1	1	2	3	4	9	10	5	8	7	6	2	2	1	1	1	1	0	0	0	2	3	3	2	0	0	1	0	0	1	2	2	2	1	1	2	3	4	
70	1	2	2	4	1	1	3	1	2	2	3	2	2	2	2	2	3	4	6	9	7	10	5	1	2	8	2	1	1	0	0	0	1	0	0	2	2	1	1	0	1	0	0	0	2	2	2	2	3	2	4	3	1	
71	2	2	3	4	2	2	2	1	3	3	2	2	2	2	2	1	1	2	3	4	8	10	9	6	7	5	2	2	1	1	1	1	0	0	0	2	2	2	2	0	1	0	0	0	1	2	2	2	1	1	2	0	0	
72	1	4	3	1	4	4	2	1	2	3	3	4	1	3	2	1	4	3	7	9	5	10	1	8	2	6	3	2	1	0	1	0	0	0	0	2	3	3	3	0	0	1	0	0	4	3	3	4	3	4	2	1	3	
73	2	2	2	4	2	2	3	3	2	2	3	2	2	2	1	1	1	6	2	4	7	10	5	3	9	8	1	2	2	1	1	1	0	0	0	2	3	3	2	0	1	0	0	0	4	3	2	2	3	4	2	1	3	

Motivation Factors of the State-owned Enterprise Personnel in China

74	1	2	2	3	2	4	3	1	2	1	3	2	1	1	1	4	1	5	9	3	6	10	4	2	7	8	2	2	2	1	0	0	1	0	0	2	5	4	2	0	0	1	0	0	3	4	3	3	4	2	4	3	1
75	1	2	3	4	2	3	3	1	1	5	5	3	2	3	1	1	1	5	0	0	0	0	2	0	4	3	2	2	3	1	0	1	1	0	0	3	5	4	3	0	0	1	0	0	3	3	3	3	1	0	0	2	1
76	1	3	3	2	3	4	3	1	2	3	3	2	2	3	2	2	3	9	5	4	8	10	1	7	2	6	3	2	2	1	1	0	0	0	0	2	3	2	2	0	0	1	1	0	3	3	3	3	4	4	2	3	1
77	1	3	3	2	3	4	3	1	2	1	3	1	2	2	1	3	3	0	4	2	0	0	1	0	0	0	2	1	1	1	1	0	0	0	0	3	3	2	1	0	0	0	1	0	3	1	3	3	4	0	0	0	1
78	2	2	3	4	3	2	3	3	1	2	5	2	3	1	1	2	10	9	7	6	5	8	4	3	1	2	1	2	1	1	1	0	0	0	0	1	3	3	3	0	0	1	0	0	4	2	3	3	1	0	0	0	1
79	1	3	3	2	3	4	3	1	2	3	5	1	3	2	1	4	1	0	0	0	0	0	0	0	0	0	1	2	3	1	0	1	0	0	0	3	4	3	2	0	0	1	0	0	3	1	3	3	1	2	3	1	4
80	1	3	3	2	3	4	3	1	1	2	5	2	2	2	1	3	2	1	3	4	5	10	6	8	7	9	1	2	1	1	0	0	1	0	0	3	3	3	3	0	0	0	0	1	3	1	3	4	1	4	3	2	1
81	2	2	2	2	2	3	3	1	2	2	5	1	1	2	1	1	1	7	8	9	6	10	2	5	3	4	2	2	1	1	1	1	0	0	0	3	3	2	1	0	0	1	0	0	4	3	3	3	1	1	3	2	4
82	2	3	3	2	4	4	3	1	2	2	3	2	2	3	1	2	1	2	7	6	9	10	5	8	3	4	3	1	1	1	1	0	0	1	3	3	2	2	0	0	1	0	0	4	3	2	2	4	4	3	2	1	
83	1	3	3	2	4	4	3	1	2	2	4	2	2	2	2	3	1	8	2	7	5	6	3	4	9	10	4	2	1	1	1	0	0	0	0	2	3	3	2	0	0	1	0	0	1	2	2	3	2	4	1	3	2
84	1	3	2	2	3	3	3	1	1	5	5	4	3	3	1	4	7	2	3	6	8	10	4	5	1	9	2	2	1	1	1	0	0	0	0	3	5	4	3	0	0	1	1	1	4	1	2	3	1	4	1	2	3
85	1	2	2	3	2	4	3	1	2	2	3	1	1	3	2	3	9	3	10	1	2	8	4	5	7	6	3	2	1	1	1	1	1	0	0	3	3	2	1	0	1	0	0	0	4	3	2	2	1	1	3	2	4
86	1	2	3	4	2	2	3	1	1	1	5	2	2	2	1	2	4	8	9	2	7	10	1	3	5	6	1	2	3	1	1	1	1	0	0	3	3	3	1	0	1	0	0	0	4	1	2	2	4	4	3	1	2
87	1	2	2	3	2	4	3	1	2	2	4	2	2	2	1	3	10	8	7	4	6	9	1	5	2	3	2	2	1	1	1	0	0	0	0	2	2	2	1	0	1	0	0	0	3	1	2	2	2	4	3	2	1
88	1	3	2	2	4	4	3	1	2	2	3	1	2	1	1	2	1	3	4	10	7	6	5	8	2	9	1	2	1	1	1	0	0	0	0	2	4	1	2	0	0	1	0	0	4	3	2	3	3	4	1	3	2
89	2	4	3	4	4	4	3	3	1	3	5	2	3	2	2	1	2	0	0	0	0	0	1	0	0	0	2	2	1	1	0	0	0	0	0	2	3	3	1	0	0	1	0	0	4	3	3	3	1	0	0	0	1
90	1	3	3	4	4	4	3	1	2	2	3	2	2	2	1	4	1	6	3	4	5	10	7	8	9	2	2	1	1	1	0	0	1	0	0	2	3	2	1	0	1	0	0	0	4	2	2	2	3	4	1	2	3
91	1	3	3	4	3	2	3	1	1	2	5	1	2	1	1	3	1	2	0	3	0	0	0	4	0	5	2	1	4	1	1	1	0	0	0	2	2	2	2	0	1	0	0	0	3	1	2	2	4	0	1	2	3
92	1	3	3	2	3	4	3	1	2	2	3	1	2	2	1	4	3	5	2	6	4	10	1	7	8	9	3	1	1	1	1	1	1	0	0	3	3	2	4	0	0	1	0	0	4	2	3	6	3	0	0	1	0
93	1	3	3	2	4	2	3	1	2	3	3	1	1	3	1	2	6	5	9	8	4	0	7	1	2	3	5	2	1	1	1	1	0	0	0	3	3	3	3	0	0	1	0	0	4	3	3	2	2	1	2	3	4

Motivation Factors of the State-owned Enterprise Personnel in China

94	1	2	3	4	2	2	2	1	1	4	5	1	2	3	2	3	1	2	9	3	5	10	6	7	8	4	4	2	1	1	1	0	0	0	0	3	5	3	1	0	0	1	0	0	3	1	3	4	1	0	1	0	0
95	1	3	3	4	4	2	3	1	1	2	5	2	2	2	1	3	1	7	8	9	6	10	4	5	2	3	1	2	1	1	1	0	0	0	0	2	3	2	2	0	1	0	0	0	2	1	2	2	1	4	1	3	2

Appendix VI

Motivation Questionnaire After the Establishment of the Motivation Model (II)

Sample No.	Post No.	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	3	4	6	9	7	5	5	5	3	5	8
2	3	8	9	7	5	6	8	2	5	6	5
3	3	2	5	3	7	8	10	6	7	4	9
4	3	3	6	6	5	9	7	8	8	9	4
5	3	9	8	7	6	5	7	2	4	5	8
6	3	4	5	9	7	6	8	6	7	7	8
7	1	3	3	7	10	9	8	6	7	5	6
10	2	9	7	9	8	7	10	3	6	4	5

Motivation Factors of the State-owned Enterprise Personnel in China

11	1	1	5	6	10	7	9	5	8	7	5
13	1	4	5	4	6	6	4	7	9	8	10
14	1	3	3	6	8	10	9	7	6	6	4
17	1	2	7	5	5	6	10	5	6	7	8
18	1	2	5	4	10	5	7	6	8	7	9
19	1	3	7	9	5	5	10	8	4	8	6
20	1	4	5	4	6	9	10	5	7	8	6
21	1	2	6	4	5	4	10	8	5	7	9
22	3	7	7	9	8	7	6	7	3	8	4
23	1	5	5	8	6	10	9	6	6	5	7
24	1	5	9	6	7	8	5	4	6	3	4
25	1	5	6	9	8	7	10	3	5	4	5

Motivation Factors of the State-owned Enterprise Personnel in China

26	1	5	6	8	9	7	3	2	4	7	3
27	1	4	4	9	6	5	10	7	8	4	2
30	1	2	5	8	7	9	6	5	5	5	6
31	3	4	5	4	7	9	6	3	8	6	6
32	3	5	8	6	2	8	9	5	2	8	7
34	3	4	6	5	6	7	5	7	5	2	9
35	3	5	6	6	7	5	5	8	2	4	5
36	1	2	9	5	10	8	7	3	4	5	6
37	2	5	6	7	8	9	10	4	9	6	7
38	1	3	8	7	10	6	9	5	6	4	4
39	1	8	7	9	5	4	10	5	6	3	4
40	2	3	8	6	6	9	10	7	6	3	3

Motivation Factors of the State-owned Enterprise Personnel in China

41	1	2	2	9	4	4	8	5	6	5	8
42	1	7	3	10	6	1	9	8	6	4	5
43	1	4	3	9	8	6	7	3	7	5	6
44	1	2	6	8	10	7	8	3	5	6	4
45	3	6	9	7	8	7	8	5	7	7	3
49	1	3	5	5	5	4	6	7	8	8	10
50	1	4	4	4	4	5	6	7	8	6	10
51	1	2	7	6	9	8	4	3	6	5	7
52	1	2	5	7	8	9	5	3	6	3	5
54	1	5	9	7	6	3	6	5	3	6	4
55	1	2	5	9	10	4	5	3	7	5	6
58	1	3	4	8	4	5	3	7	9	2	6

Motivation Factors of the State-owned Enterprise Personnel in China

59	1	4	9	5	6	3	4	5	8	6	5
60	1	10	9	8	6	5	7	5	3	3	4
61	1	2	9	4	8	7	10	5	6	5	4
62	1	9	10	5	4	5	8	2	6	4	7
64	2	5	8	9	7	8	10	5	7	5	5
65	2	7	5	10	9	9	5	7	6	8	5
66	2	5	6	10	9	8	4	4	8	7	6
68	2	6	7	9	7	7	10	3	9	4	4
67	1	4	4	3	8	7	5	4	9	6	6
69	1	3	3	5	6	9	5	5	8	6	6
70	1	3	4	6	9	7	4	5	5	4	8
71	1	5	4	3	4	8	3	9	6	7	5

Motivation Factors of the State-owned Enterprise Personnel in China

72	1	4	4	7	9	5	6	1	8	7	6
73	3	4	6	2	7	7	7	5	4	9	8
74	1	6	5	9	5	6	4	4	4	7	8
76	1	3	9	5	4	8	7	1	7	2	6
78	3	10	9	7	6	5	8	4	3	5	4
80	1	2	4	3	4	5	4	6	8	7	9
81	1	7	7	8	10	6	3	2	5	3	4
82	1	1	4	7	6	9	4	5	8	3	4
83	1	6	8	5	7	5	6	3	4	6	10
84	1	7	5	6	6	8	10	4	5	5	9
85	1	9	3	10	5	3	8	4	7	7	6
86	1	4	8	9	6	7	10	1	5	5	6

Motivation Factors of the State-owned Enterprise Personnel in China

87	1	10	8	7	5	6	9	1	5	7	3
88	1	5	4	5	10	7	6	5	8	4	9
90	1	3	6	5	7	5	10	7	8	7	5
92	1	3	5	4	6	5	10	1	7	8	9
94	1	4	5	9	5	5	10	6	7	7	4
95	1	1	7	8	9	6	5	4	5	4	7

Appendix VII

Performance Assessment Statistics of 2016

Assessment No.	Post No.	I. Experience & Knowledge 4-20	II. Professional Skills 4-20	III. Sense of Responsibility 4-20	IV. Work Coordination 4-20	V. Working Enthusiasm 4-20	VI. Special Bonus/Deduction (10 points at maximum per item)0-40	Total
1	1	12	12	8	12	8	10	62
2	1	12	12	12	12	12	10	70
3	1	16	16	16	8	12	15	83
4	1	12	12	12	12	12	10	70
5	1	8	12	12	8	8	14	62
6	1	12	12	12	12	12	10	70
7	1	16	20	16	12	8	13	85

Motivation Factors of the State-owned Enterprise Personnel in China

8	1	12	12	12	12	12	14	74
9	1	16	20	12	12	12	10	82
10	1	12	12	8	4	12	10	58
11	1	16	12	12	12	8	10	70
12	1	12	12	12	8	12	10	66
13	1	12	12	12	12	12	10	70
14	1	16	16	12	12	4	10	70
15	1	12	12	12	8	12	10	66
16	1	8	12	12	12	12	13	69
17	1	8	12	12	12	8	12	64
18	1	16	20	12	12	4	10	74
19	1	12	12	12	12	12	15	75

Motivation Factors of the State-owned Enterprise Personnel in China

20	1	12	12	12	12	12	11	71
21	1	16	16	12	12	12	15	83
22	1	12	12	12	12	12	10	70
23	1	12	12	12	8	12	17	73
24	1	12	12	12	12	12	10	70
25	1	12	12	8	12	12	12	68
26	1	20	16	16	12	12	10	86
27	1	12	12	12	16	12	16	80
28	1	16	12	12	12	12	14	78
29	1	12	12	12	12	12	10	70
30	1	12	12	12	12	12	10	70
31	1	12	12	12	12	4	15	67

Motivation Factors of the State-owned Enterprise Personnel in China

32	1	12	12	12	16	12	10	74
33	1	8	12	12	12	12	12	68
34	1	12	12	8	8	8	10	58
35	1	12	12	12	12	12	15	75
36	1	8	12	12	12	12	12	68
37	1	12	12	12	8	4	15	63
38	1	12	12	12	12	12	10	70
39	1	12	12	12	16	12	15	79
40	1	12	12	12	12	12	10	70
41	1	4	12	4	12	4	12	48
42	1	12	12	12	12	12	15	75
43	1	12	12	12	8	8	17	69

Motivation Factors of the State-owned Enterprise Personnel in China

44	1	16	20	12	12	12	13	85
45	1	8	12	12	12	12	15	71
46	1	12	12	12	12	12	12	72
47	1	12	12	12	8	12	17	73
48	1	12	12	12	12	12	10	70
49	1	12	12	12	12	16	16	80
50	1	12	12	12	8	12	18	74
51	1	16	16	12	12	8	15	79
52	1	12	12	12	12	12	10	70
53	1	12	12	12	12	12	16	76
54	2	12	12	8	8	12	13	65
55	2	12	12	8	12	12	14	70

Motivation Factors of the State-owned Enterprise Personnel in China

56	2	12	8	12	12	12	12	68
57	2	16	12	12	8	16	15	79
58	2	12	12	12	12	12	11	71
59	2	16	12	16	8	12	13	77
60	2	12	12	16	12	12	6	70
61	3	12	12	12	12	12	9	69
62	3	16	12	12	16	16	12	84
63	3	12	8	12	12	12	12	68
64	3	16	12	12	16	16	10	82
65	3	12	8	12	12	8	8	60
66	3	16	12	16	16	12	9	81
67	3	12	8	12	12	12	10	66

Motivation Factors of the State-owned Enterprise Personnel in China

68	3	8	12	12	12	12	10	66
69	3	16	16	16	20	12	9	89
70	3	12	12	8	12	16	15	75
71	3	16	20	20	20	16	9	101
72	3	16	16	20	20	12	9	93
73	3	12	12	16	16	12	9	77
74	3	12	12	16	16	12	8	76

Appendix VIII

Performance Assessment Statistics of 2017

No.	Post	I. Experience & Knowledge 4-20	II. Professional Skills 4-20	III. Sense of Responsibility 4-20	IV. Work Coordination 4-20	V. Working Enthusiasm 4-20	VI. Special Bonus/Deduction (10 points at maximum per item) 0-40	Total
1	1	16	16	12	16	16	21	97
2	1	12	16	12	12	16	18	86
3	1	20	16	16	12	16	17	97
4	1	16	16	12	12	12	12	80
5	1	12	16	12	12	12	14	78
6	1	16	12	12	12	12	15	79

Motivation Factors of the State-owned Enterprise Personnel in China

7	1	16	20	16	12	12	23	99
8	1	12	16	12	12	12	18	82
9	1	20	20	12	12	16	26	106
10	1	12	12	12	8	12	21	77
11	1	20	16	12	12	8	15	83
12	1	12	12	12	12	12	15	75
13	1	16	16	16	12	12	12	84
14	1	20	20	16	16	12	28	112
15	1	12	12	12	12	12	12	72
16	1	12	16	16	16	20	30	110
17	1	12	12	12	16	12	15	79
18	1	20	20	12	12	12	16	92

Motivation Factors of the State-owned Enterprise Personnel in China

19	1	12	16	16	16	20	15	95
20	1	16	12	12	12	12	12	76
21	1	20	20	12	12	16	15	95
22	1	12	12	16	12	12	11	75
23	1	12	12	12	12	12	17	77
24	1	12	16	12	12	16	16	84
25	1	12	12	8	12	12	13	69
26	1	20	20	16	12	12	25	105
27	1	12	12	12	16	16	16	84
28	1	16	12	16	12	12	5	73
29	1	12	12	16	16	12	12	80
30	1	12	16	12	12	12	11	75

Motivation Factors of the State-owned Enterprise Personnel in China

31	1	12	12	16	12	12	15	79
32	1	12	12	12	16	12	13	77
33	1	12	16	12	12	12	12	76
34	1	12	12	16	12	12	12	76
35	1	12	12	12	12	12	11	71
36	1	12	16	12	16	12	15	83
37	1	12	12	12	12	8	10	66
38	1	12	16	12	12	12	10	74
39	1	12	12	12	16	12	15	79
40	1	12	16	12	12	12	10	74
41	1	12	16	12	12	12	15	79
42	1	12	12	12	12	12	12	72

Motivation Factors of the State-owned Enterprise Personnel in China

43	1	12	12	12	12	8	11	67
44	1	16	20	12	12	16	20	96
45	1	12	12	16	12	12	12	76
46	1	12	12	12	16	12	12	76
47	1	12	12	16	12	12	15	79
48	1	12	20	12	12	12	18	86
49	1	16	12	12	12	16	16	84
50	1	12	12	12	12	12	18	78
51	1	20	20	16	16	16	35	123
52	1	12	12	12	12	12	15	75
53	1	12	12	12	16	12	14	78
54	2	12	16	12	12	16	18	86

Motivation Factors of the State-owned Enterprise Personnel in China

55	2	16	20	8	12	16	16	88
56	2	16	12	12	12	16	17	85
57	2	16	12	20	12	20	18	98
58	2	12	16	12	12	12	16	80
59	2	16	16	16	12	16	18	94
60	2	20	20	20	12	12	16	100
61	3	12	12	16	16	16	14	86
62	3	16	16	12	16	20	15	95
63	3	12	12	20	12	12	10	78
64	3	16	16	16	16	20	10	94
65	3	12	12	20	16	12	9	81
66	3	16	12	16	16	16	10	86

Motivation Factors of the State-owned Enterprise Personnel in China

67	3	12	16	12	16	12	10	78
68	3	12	16	12	12	16	15	83
69	3	16	16	16	20	16	18	102
70	3	12	12	12	16	16	15	83
71	3	16	20	20	20	16	9	101
72	3	16	16	20	20	16	14	102
73	3	16	12	16	16	16	9	85
74	3	12	16	20	16	12	8	84